Expanded Site Inspection
Final Report

Avenue O and 118th Street
Chicago, Illinois
ILD 981 194 087

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1.0 Introduction

On February 4, 1993, the Alternative Remedial Contracting Strategy (ARCS) contractor was authorized by the U.S. Environmental Protection Agency (USEPA) Region V to conduct an expanded site inspection (ESI) of the Avenue O and 118th Street (Avenue O) site, Cook County, Illinois.

The site was entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) in March 1986 because USEPA and field investigation team (FIT) contractor personnel observed that the former illegal dump site was being developed into a residential subdivision with a shopping center.

On October 1, 1974, the site was declared an illegal dumping site by Illinois Environmental Protection Agency (IEPA) when it first inspected the site. On March 11, 1986, the site received its initial Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) evaluation in the form of a preliminary assessment (PA) report completed by IEPA. On June 11, 1986, IEPA completed a site inspection (SI) report. On October 7, 1991, FIT personnel completed a PA reassessment of the site. The sampling portion of the ESI was conducted during April 11 and 12, 1994, when a field team collected fifteen soil and three sediment samples.

USEPA stated the purposes of the ESI in a directive outlining site inspections performed under CERCLA. The directive states:

> The objective of the expanded SI is to provide documentation for the Hazard Ranking System (HRS) package to support National Priority List (NPL) rule making. Remaining HRS information requirements are addressed and site hypotheses not completely supported during previous investigations are evaluated. Expanded SI sampling is designed to satisfy HRS data requirements by documenting observed releases, observed contamination, and levels of actual contamination at targets. In addition, investigators collect remaining non-sampling information. Sampling during the expanded SI includes background and quality assurance/quality control samples to fully document releases and attribute them to the site. Following the expanded SI, USEPA site assessment managers assign the site a priority for HRS package preparation and proposal to the NPL.

USEPA Region V directed the ARCS V contractor to determine whether emergency removal action is required at the site to remediate an immediate human

health or environmental threat. No emergency removal action requirements were identified during field activities at the Avenue O site.

2.0 Site Background

2.1 Introduction

This section includes information obtained during the ESI and from reports of previous site activities.

2.2 Site Description

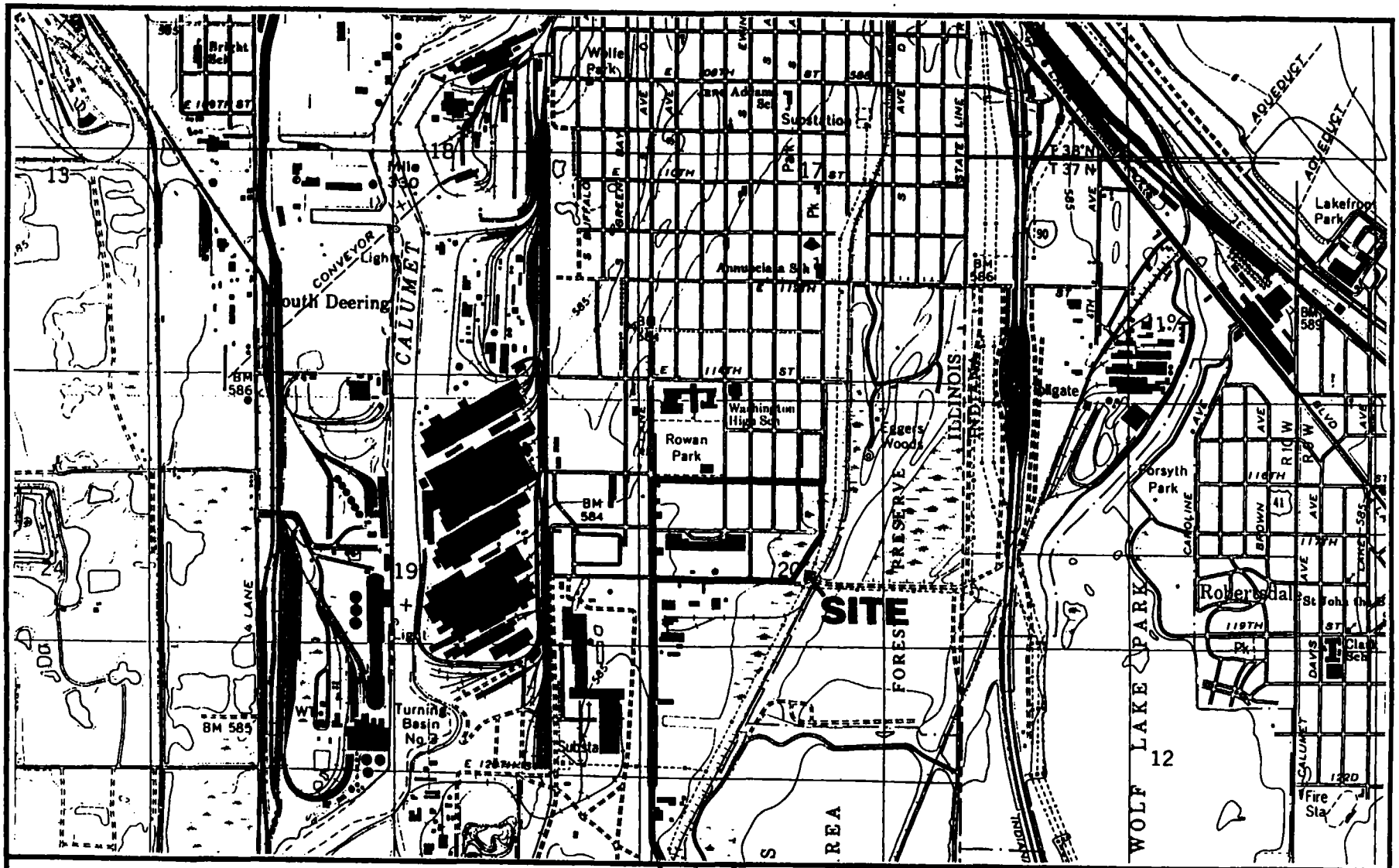
The Avenue O site covers about 35 acres in Section 20, Township 37 North, Range 15 East, Chicago, Illinois (U.S. Geological Survey 1991c). Figure 2-1 is a site location map.

Although exact site boundaries are unknown, the site is described in IEPA and USEPA files as east of Avenue O between 116th and 118th Streets. IEPA and USEPA files identified the eastern site border as the area immediately east of Ewing Avenue; however, portions of the wetlands at the southeastern section of the site have been filled in to accommodate residential housing development, and the site now extends eastward, beyond Ewing Avenue, to Avenue H (FIT Contractor 1986a). Figure 2-2 is a site layout map.

Within 4 miles of the site, land use is a combination of residential and industrial areas. Appendix A contains a 4-mile radius map.

Most of the site has been developed into a residential area with some paved roads, a small shopping mall, and other businesses. Construction of residential family housing units onsite is ongoing. Many unpaved, compacted dirt roads are onsite. A few areas have exposed earth, including the backyards of new houses and an undeveloped block between 116th and 117th Streets. It is not known whether the unpaved areas contain in situ or fill materials brought onsite to develop the property.

The site's southeastern corner contains visible remnants of solid waste mixed with dirt and other construction debris. The dirt and debris has been pushed to the southern and eastern site boundaries as shown in Figure 2-2. The dirt and debris forms an embankment that extends several hundred yards along these two dirt roads. The embankment varies in height from about 3 to 6 feet and varies in width from about 12 to 25 feet.



SOURCE: USGS TOPO MAP
LAKE CALUMET QUAD; 1991

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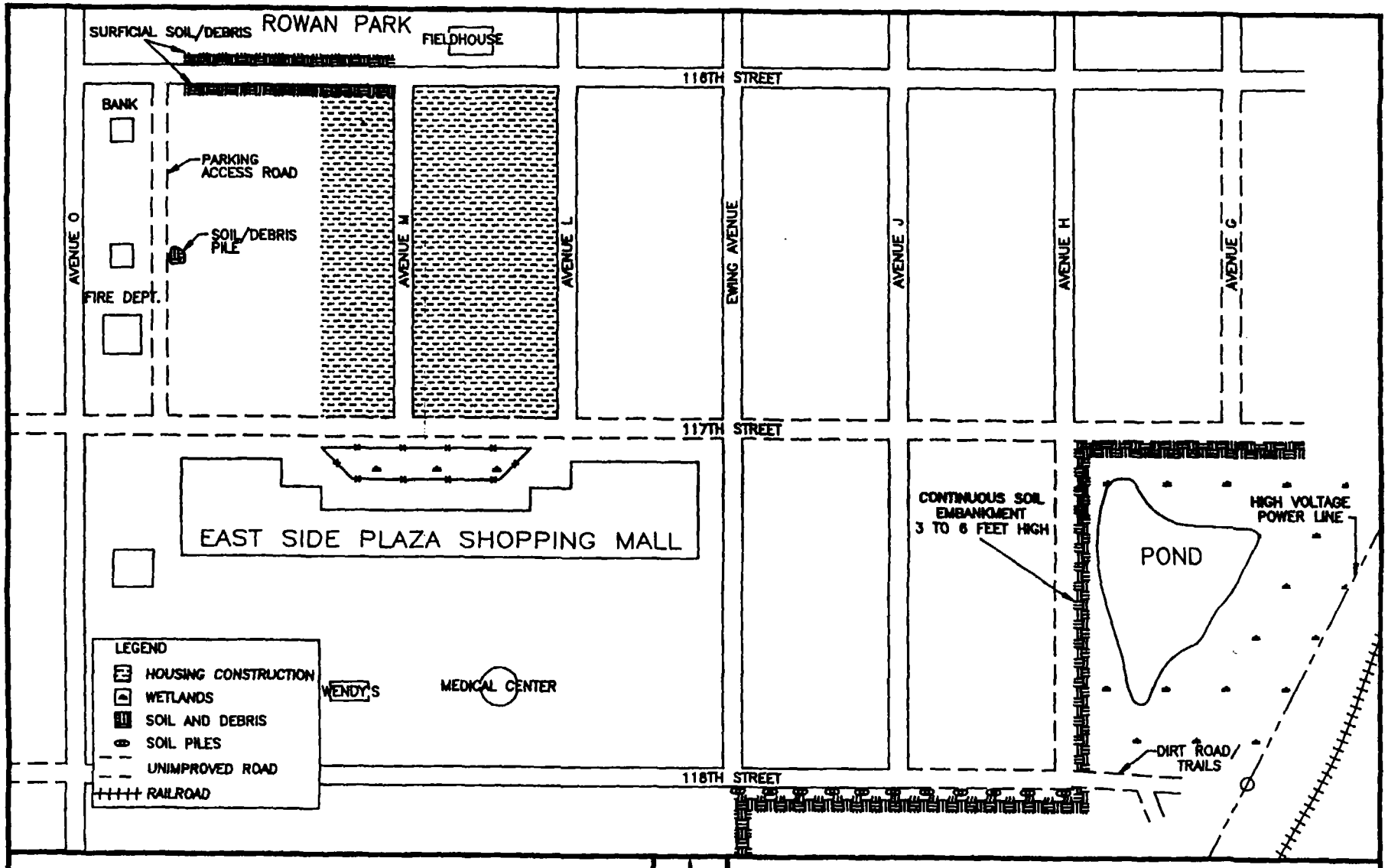
FIGURE 2-1
SITE LOCATION MAP

AVENUE O & 118TH STREET
CHICAGO, ILLINOIS



SOURCE: MODIFIED FROM USGS, 1991

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FIGURE 2-2
SITE LAYOUT MAP

AVENUE O & 118TH STREET
CHICAGO, ILLINOIS

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2.3 Site History

In October 1974, IEPA first inspected the Avenue O site and found scrap metal, wood, and concrete debris. IEPA also observed an unknown white powder suspected to be crushed concrete and evidence of open burning. Site files indicate random dumping occurred onsite. All accounts of illegal random dumping involved construction debris, demolition materials, and general solid waste (FIT Contractor 1986b).

Much of the area around the site had been swampland that was filled and developed into usable land. During an April 1986 site inspection, FIT personnel observed that the site had been developed into a residential subdivision with a mini-mall. The mall is located near the corner of Avenue O and 118th Street. FIT personnel also observed piles of slag-like materials on site.

On June 10, 1991, another FIT conducted an offsite reconnaissance inspection of the area. FIT personal observed ongoing construction and dirt piles littered with debris, such as concrete rubble, bricks, and cardboard. It was not evident whether the observed debris was old or newly deposited.

No documentation of onsite hazardous waste dumping was found. No record of cleanup or emergency removal action exists. The site's history before 1974 is unknown (FIT Contractor 1991).

2.3.1 Operational History

IEPA declared the Avenue O site an illegal dump in 1974. Before it was developed into a residential community, the site was used for the illegal disposal of solid wastes, including scrap metal, wood, concrete, and other debris. Site records indicate the primary items dumped at the site are demolition material and other construction generated solid wastes. Numerous dirt trails and roadways were used for random dumping. Also, evidence of open burning was observed onsite.

Large portions of the site have been developed into residential housing and small businesses. It is unfenced, and access is unrestricted. Undeveloped, unpaved areas and dirt piles containing solid waste debris are onsite. No environmental sampling of this site had been conducted prior to ESI sampling. The full environmental impact of the site on the community and neighboring wetlands is unknown.

2.3.2 Summary of Onsite Environmental Work

IEPA initially inspected the site on October 1, 1974, when evidence of random dumping and open burning was observed onsite. The site was then declared an illegal dumping site. Local police were notified to enforce the prohibition of unlawful dumping; however, it is not known whether the police took subsequent action at the site.

On January 15, 1986, IEPA and FIT contractor personnel conducted a site visit and completed EPA Form 2070-12, Potential Hazardous Waste Site Preliminary Assessment.

On April 30, 1986, FIT members conducted the SI visit to the Avenue O site. They observed that a shopping mall and residential subdivision covered a large portion of the site. Undeveloped areas were overgrown with vegetation and there were piles of slag-like material onsite. The Avenue O site SI is listed in CERCLIS as completed on June 11, 1986.

After performing the PA and the SI and reviewing site files, FIT personnel recommended low priority site inspection status for the Avenue O site because of "the lack of information about what is presently at the site." At that point in time, there was no evidence of hazardous waste activities nor the release of hazardous substances at the site.

On June 10, 1991, as part of a PA reassessment, FIT contractor personnel conducted a drive-by reconnaissance inspection of the Avenue O site. FIT observed ongoing construction and dirt piles that were littered with debris, such as concrete, bricks, and cardboard. The PA reassessment of the Avenue O site was completed on October 7, 1991. After conducting the PA reassessment, FIT personnel recommended medium priority site inspection status for the Avenue O site because of concern that onsite residents could be exposed to possible surficial contamination.

2.4 Applicability of Other Statutes

No records were found to suggest that the Avenue O site was ever permitted under the Resource Conservation and Recovery Act.

3.0 Site Inspection Activities and Analytical Results

3.1 Introduction

This section outlines the procedures used and observations made during the ESI conducted at the Avenue O site. Sampling activities were conducted in accordance with the quality assurance project plan (QAPjP). Each sample was collected with a clean stainless steel spoon and placed in a clean sample jar. Sample jars were sealed, labeled, packaged, and transported to USEPA contract laboratory program (CLP) participant laboratories, in accordance with procedures set forth in the QAPjP (USEPA 1991).

Figure 3-1 shows onsite sample locations; Figure 3-2 shows offsite sample locations. Table 3-1 provides a summary of sample descriptions and locations. Table 3-2 identifies CLP laboratories used for chemical analyses of ESI samples, listed by media sampled and category of analysis performed.

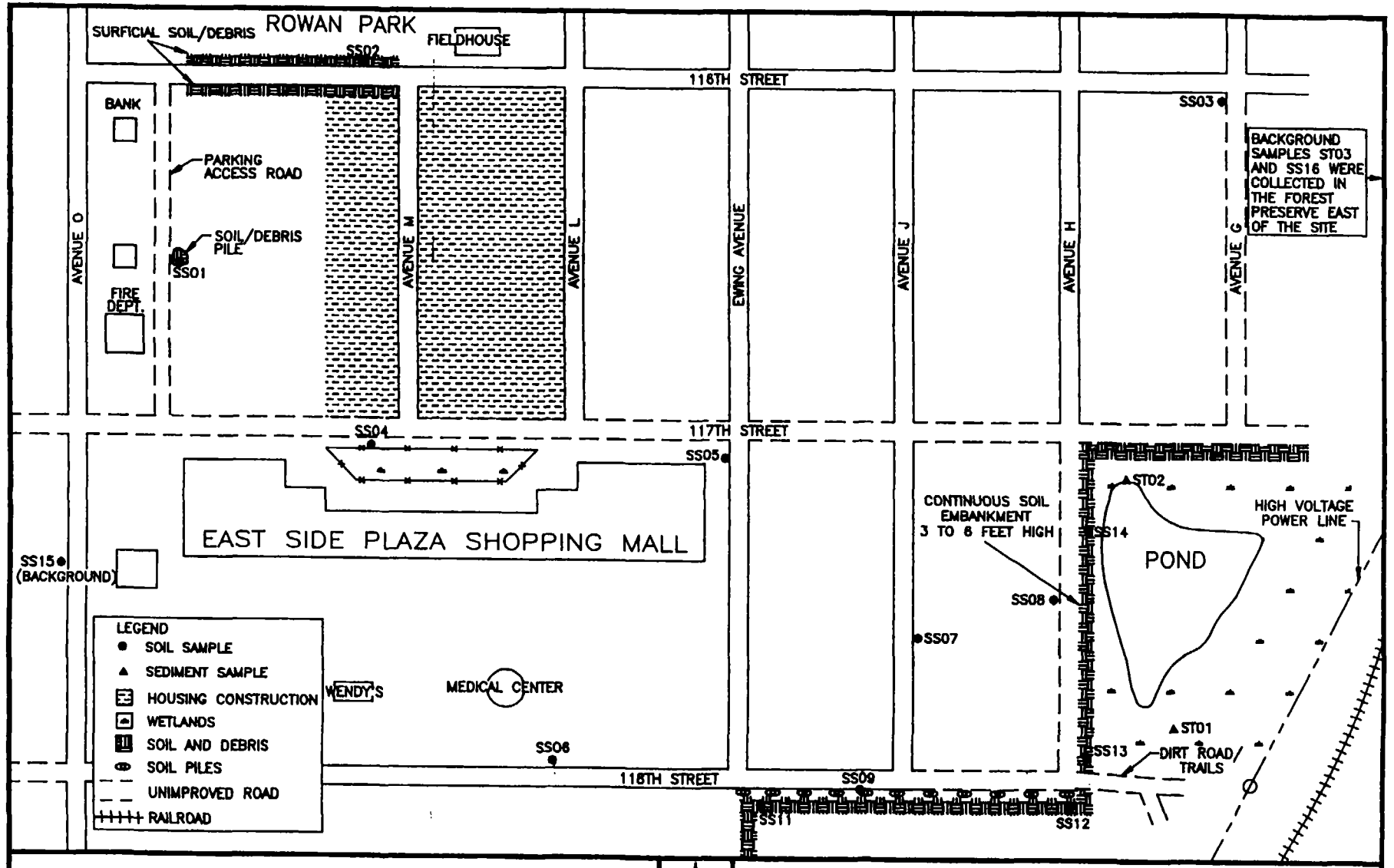
USEPA CLP participant laboratories analyzed ESI samples for organic and inorganic substances contained on the USEPA target compound list (TCL) and target analyte list (TAL). Appendix B presents the TCL and TAL. Appendix C presents a summary of all analytical data generated by ESI sampling. Appendix D contains photographs of the site and sample locations.

All reusable sampling and personal protective equipment (PPE) were decontaminated before transport offsite. Disposable sampling equipment and PPE items were discarded in accordance with procedures outlined in the ESI site-specific implementation plan and the QAPjP.

3.2 Site Reconnaissance

ARCS V contractor personnel conducted a drive-by reconnaissance inspection of the Avenue O site on April 6, 1993. ARCS contractor representatives drove around various streets that encompass the site including Avenue O, Ewing Avenue, Avenue H, 116th Street, 117th Street, and 118th Street. The site is a residential area with a small shopping mall and other small businesses. A small fire station is located on Avenue O, between 116th Street and 117th Street.

Although housing construction activity is ongoing, no work was in progress during the drive-by reconnaissance. Several unpaved roads are in the community, and several new housing units had loosely placed fill material in their yards. Piles of soil and construction debris were observed along the southern side of 118th Street.



SOURCE: MODIFIED FROM USGS, 1991

SCALE: NOT TO SCALE

FIGURE 3-1
ONSITE SAMPLING LOCATION MAP

AVENUE O & 118TH STREET
CHICAGO, ILLINOIS

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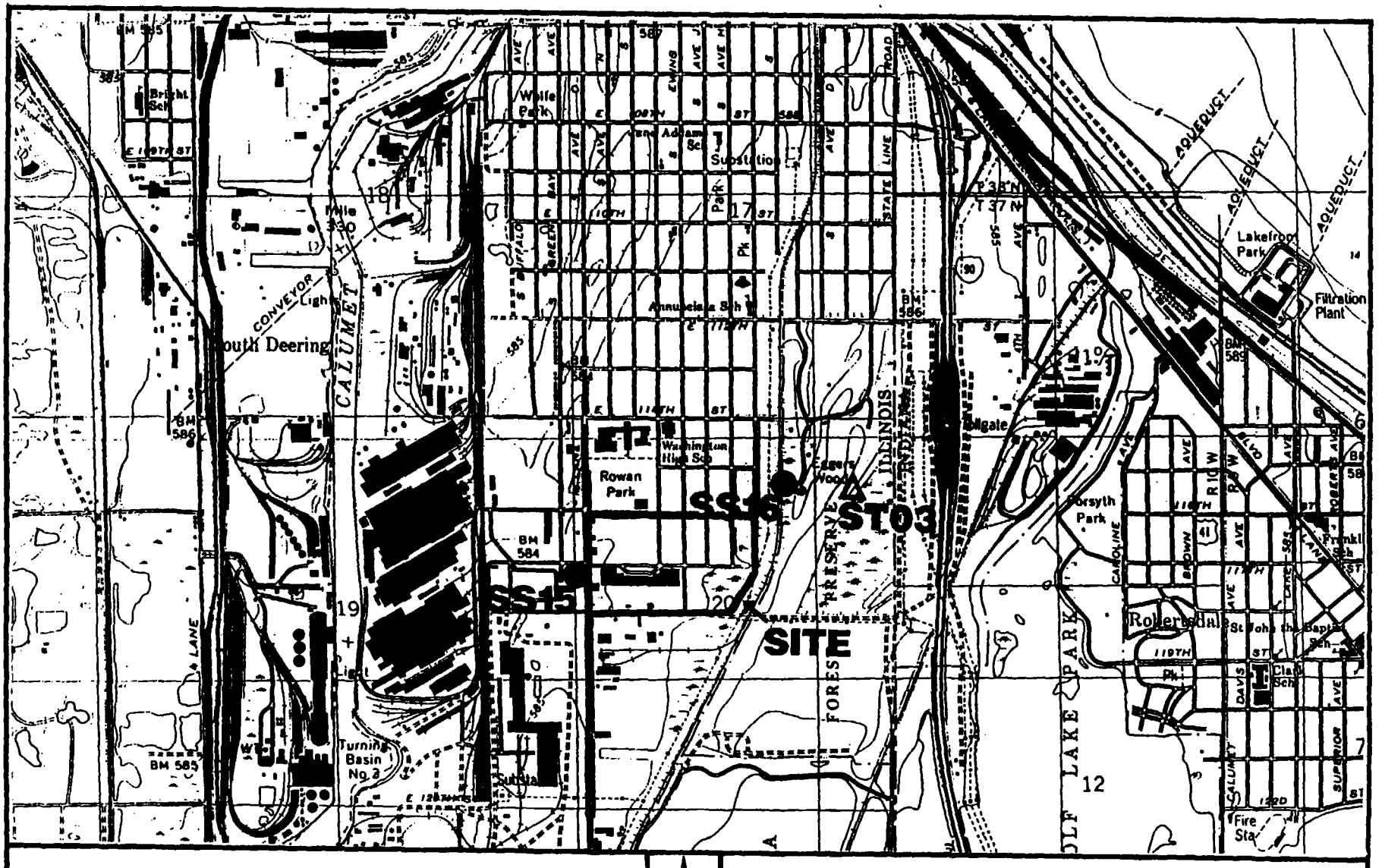

LEGEND: ● SOIL △ SEDIMENT

SOURCE: USGS TOPO MAP
LAKE CALUMET QUAD; 1991
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FIGURE 3-2
OFFSITE SAMPLE LOCATION MAP

AVENUE O & 118TH STREET
CHICAGO, ILLINOIS

Table 3-1
Sample Descriptions
Avenue O Site

Sample No.*	Depth (Inches)	Appearance	Location
SS01	6 - 10	Brown sandy soil with some organics, slightly damp.	Piled soil (excavation material from adjacent new homes) on the western half of the property encompassed by 116th Street, 117th Street, Avenue M, and a road east of (behind) the bank and fire station on Avenue O.
SS02	6 - 10	Gray soil with slag, some brick chips, and wood.	Soil and construction debris spread along the north shoulder of 116th Street, at the northwestern corner of the Avenue M and 116th Street intersection.
SS03	16 - 24	Damp sandy soil with brick chips and bluish material.	Grassy area between sidewalk and Avenue G, at the southwestern quadrant of the Avenue G and 116th Street intersection.
SS04	6 - 10	Gray gravelly clay with some yellowish mottling, damp.	North of East Side Plaza Shopping Mall, near the northwestern corner of a fenced-off retention pond.
SS05	10 - 14	Brown sandy soil with gravel, damp.	West side of Ewing Avenue, in a grassy area between the street and sidewalk, about 50 feet northeast of the northeast corner of the mall.
SS06	12 - 18	Black, fly ash-like material.	About 200 feet west of Ewing Avenue, just north of 118th Street, in a grassy area between the sidewalk and 118th Street.
SS07	10 - 12	Black topsoil material, moist.	East side of Avenue J, between the street and the sidewalk, near the middle of the block between 117th and 118th Streets.
SS08	14 - 18	Black sandy topsoil with some gravel.	Backyard of a home on Avenue J, at middle of the block between 117th and 118th Streets.
SS09	6 - 10	Dark gray to black sandy soil with construction debris, damp.	Soil and debris heap, south of 118th. Street, between 118th Street and the embankment along the site's southern perimeter, about 100 feet west of Avenue J.
SS10	--	Not Applicable.	No sample was collected, several attempts to dig at the proposed location proved unsuccessful due to obstructions.
SS11	6 - 10	Loose sandy topsoil with some organics, dark brown, with minimal moisture.	Half-way up north side of a soil embankment on the south side of 118th Street, 20 feet south of the southeast intersection of Ewing Avenue and 118th Street.
SS12	6 - 10	Loose sandy topsoil with some organics, dark brown, with minimal moisture.	The eastern end of soil embankment that runs along the south side of 118th Street, near Avenue H, about 20 feet south of the road, near a box elder tree.

Table 3-1 (Continued)
Sample Descriptions
Avenue O Site

Sample No.*	Depth (Inches)	Appearance	Location
SS13	6 - 10	Loose sandy topsoil with some organics, dark brown, with minimal moisture.	The south end of soil embankment that runs along Avenue H between 117th and 118th Streets.
SS14	6 - 10	Silty sandy soil, brown, loose.	The north end of soil embankment that runs along Avenue H between 117th and 118th Streets, across street form the garage of third house from 117th Street
SS15	6 - 10	Black clayey topsoil, moist.	Background; west of fire hydrant on the west side of Avenue O, between 117th. and 118th Streets; about 25 feet west of Avenue O.
SS16	6 - 10	Black topsoil with sand and some organics.	Background in the Eggers Woods Forest Preserve, about 0.2 mile east of site.
ST01	0 - 6	Black muck with organics, wet.	Southeastern corner of pond and wetlands, east of the site's southeastern corner.
ST02	0 - 6	Black mucky soil with organics, wet.	Northwestern corner of pond and wetlands, east of the site, near the intersection of 117th Street and Avenue H.
ST03	0 - 6	Black muck with some sand and organics.	Offsite in Eggers Woods Forest Preserve, about 0.4 mile northeast from site's southeastern corner.

* Sample Numbers are made up of four alpha numerics (two letters followed by two numbers). The two letters designate the type of media sampled and the two numbers designate the different sample locations for each media. SS and ST designate soil and sediment samples respectively.

-- Not applicable, no entry required in the above table.

Table 3-2 Laboratory Information Avenue O Site		
Media	Analyses	Laboratory
Soil	Organic	American Analytical and Testing Services Baton Rouge, Louisiana
	Inorganic	Southwest Laboratories of Oklahoma Broken Arrow, Oklahoma
Sediment	Organic	Keystone Laboratory Houston, Texas
	Inorganic	ITMO St. Louis Laboratory Earth City, Missouri

A continuous embankment of soil, laced with construction and other solid waste items, was observed along the south side of 118th Street, east side of Avenue H, and south side of 117th Street. The embankment varied in size from 3 to 6 feet high and 12 to 25 feet wide. The embankment runs along the western and northern perimeters of the wetlands, which are located east of the site. Examples of solid wastes observed in the construction debris heaps, in the soil embankment, and in the wetlands east of the site include concrete rubble, scrap metal, rubber, plastic bags and sheets, wooden and paper items, discarded furniture, and other garbage. Garbage and discarded furniture items were dumped in the wetland and along dirt trails leading from the southeastern site corner toward the railroad tracks east of the site.

3.3 Site Representative Interview

During the reconnaissance, ARCS contractor representatives had a brief conversation with a male resident who lives in a new house near the intersection of 118th Street and Avenue H. The individual initially questioned the ARCS contractor personnel about what they were doing. ARCS contractor representatives introduced themselves and explained that they were making observations about general environmental conditions in the area because of concern about illegal random dumping in the area. The individual volunteered information about onsite construction activities, explaining that he and his wife purchased their house because it is at the back (east-most row) of the development. This location has a view of the small wetland (pond and wooded area) and railroad tracks east (behind) of their property. However, the couple now suspects that the development contractor is

slowly pushing fill material east, beyond Avenue H, to fill in a portion of the wetland so that another row of houses can be constructed. The individual stated that he has observed the contractor steadily moving soil and fill material toward the southeastern perimeter of the site. He also said that representatives from the U.S. Army Corps of Engineers and possibly IEPA had been onsite within the past week or so and initiated orders to stop the contractor from filling in the wetlands.

3.4 Summary of Site Conditions

Most of the former random dump site has been developed into a residential area with a small shopping mall and other businesses. Onsite construction of residential family housing units is ongoing. The most recent housing construction activity is occurring in the northwestern site quadrant. Many unpaved, compacted dirt roads are onsite. A few areas have exposed earth, including the backyards of new houses and an undeveloped block between 116th and 117th Streets. It is not known whether the unpaved areas contain in native soil or fill material brought onsite to develop the property.

The southeastern corner of the site contains visible remnants of solid waste mixed with soil and other construction debris. The soil and debris have been pushed south and east as shown on Figure 2-2. The soil and debris form an embankment, varying in height and width, that extends several hundred yards along two dirt roads adjacent to the western and northern perimeters of the wetlands area east of the site.

3.5 Soil Sampling

On April 11 and 12, 1994, the ESI field team collected soil samples at the Avenue O site. Soil samples were collected to identify possible onsite contamination resulting from prior illegal waste dumping activities and possible onsite burning of hazardous materials/wastes. Soil sample locations were selected using USEPA file information regarding random dumping activity and observations made during the site reconnaissance. Some sample locations were altered during the sampling field trip to accommodate field conditions.

Fifteen soil samples were collected for this ESI site. Two of the fifteen soil samples were considered background samples. Thirteen soil samples were collected within the targeted onsite area encompassed by Avenue G, Avenue O, 116th Street, and 118th Street.

Four samples were collected from the continuous onsite soil embankment that runs along the southeastern and eastern site perimeters. The four embankment samples are soil samples SS11, SS12, SS13, and SS14.

Three samples were collected from soil piles laced with construction debris. Sample SS01 was collected from an excavated soil pile near new construction in the northwestern quadrant of the site. Sample SS02 was collected from a soil and construction debris pile along the north side of 116th Street in the northwestern quadrant of the site. Sample SS09 was collected from a soil and construction debris pile on the north side of 118th Street in the southeastern quadrant of the site.

Three soil samples were collected from spots adjacent to the onsite shopping mall; SS04 was collected north of (behind) the mall, SS05 was collected east of the mall, and SS06 was collected south of the mall. SS04 was collected near a small fenced-in wetland area. SS05 and SS06 were collected from grassy areas between sidewalks and streets.

Two other samples, SS03 and SS07, were collected from grassy areas between residential sidewalks and streets, and one (SS08) from a residential backyard.

Nine of the ESI soil samples (SS03, SS05, SS07, SS08, SS09, SS11, SS12, SS13, and SS14) were collected within 200 feet of residential properties. The two background samples were collected offsite; one (SS15) west of the onsite shopping mall, west of Avenue O, and the other (SS16) from the Eggers Woods Forest Preserve, located about 0.2 mile east of the site.

3.6 Sediment Sampling

On April 11 and 12, 1994, ESI sediment samples were collected at the Avenue O site. Sediment samples were collected to identify possible release of hazardous substances from the site to neighboring wetlands and forest preserve natural areas east of the site.

Three sediment samples were collected. Two sediment samples were collected from wetlands (including a pond and wooded area) east of the site; one (ST01) was collected at the southeastern corner of the wetlands, and the other sample (ST02) was collected at the northwestern corner of the wetlands. A third sediment sample (ST03) was collected to establish background sediment conditions for the area. The background sediment sample was collected from wetlands within the Eggers Woods Forest Preserve, at a location about 0.4 mile northeast from the site's southeastern corner.

3.7 Analytical Results

This section summarizes ESI analytical results; Appendix C presents ESI analytical data.

The following discussion is about ESI release samples that exceed the ESI background concentrations and confirm observed release at the Avenue O site.

3.7.1 Soil Samples Analytical Results

Fifteen soil samples were collected for the Avenue O site ESI. Two soil samples were collected offsite and used to represent background conditions. Analyses of onsite ESI soil samples identified 15 semivolatile organic compounds, one PCB compound, and six inorganic analytes with concentrations meeting observed release criteria.

Soil sample SS01 was collected from the excavated soil pile in the northwestern quadrant of the site. SS01 contains eight semivolatile organic compounds ranging from 2.3 to 19 milligrams per kilogram (mg/kg) that meet observed release criteria.

Soil sample SS02 was collected from the north shoulder of 116th Street, near the northwestern intersection of Avenue M and 116th Street, in an unpaved area with soil/debris. SS02 contains a semivolatile organic compound at 1.3 mg/kg that meets observed release criteria.

Soil samples collected beneath grassy areas between sidewalks and roads with concentrations meeting observed release criteria include SS03, SS05, SS06, and SS07. SS03 contains nine semivolatile organic compounds ranging from 1.6 to 16 mg/kg. SS05 contains one semivolatile organic constituent at 0.75 mg/kg. SS06 contains a heavy metal at 550 mg/kg.

Soil sample SS04, collected behind (north of) the onsite shopping mall, has a semivolatile constituent at 7.5 mg/kg that meets observed release criteria.

Soil samples SS11, SS12, SS13, and SS14, collected from the continuous soil embankment that runs along the southeastern and eastern site boundaries, contained hazardous substances in concentrations that meet observed release criteria. Soil sample SS11 contains one semivolatile organic compound at 5.6 mg/kg and three metals ranging from 16.6 to 633 mg/kg. SS12 contains two metals at 276 and 31,100 mg/kg; SS13 contains a metal at 166 mg/kg; and SS14 contains two semivolatiles at 1.3 and 2.8 mg/kg, one polychlorinated biphenyl compound at 1.6 mg/kg, and one metal at 170 mg/kg.

3.7.2 Sediment Samples Analytical Results

Three sediment samples were collected for the Avenue O site ESI. Analyses of the ESI sediment samples confirm observed releases of hazardous substances to the wetlands area east of the site. ESI sediment sampling analytical results identified one semivolatile organic compound and four inorganic analytes.

Sediment samples ST01 and ST02 were collected from the wetlands area east of the Avenue O site. ST01 contains three metals and ST02 contains one semivolatile organic compound and two metals, all meet observed release criteria.

3.8 Key Samples

"Key samples" are those samples that contain hazardous substances in sufficient concentration to document an observed release when compared to samples considered to be representative of background conditions, using observed release criteria. Table 3-3 identifies ESI key samples and background samples.

Table 3-3
Key Sample Summary
Avenue O and 118th Street Site

Surface Soil (mg/kg)

Substance	Sample Number								
	SS01	SS02	SS03	SS04	SS05	SS11	SS14	SS15 Background	SS16 Background
Naphthalene			2.1					0.094 J	0.15 J
Acenaphthylene	2.3				0.75			0.38 U	0.52 U
Acenaphthene			2.0					0.088 J	0.52 U
Dibenzofuran			1.6					0.38 U	0.52 U
Fluorene			3.2					0.089 J	0.52 U
Phenanthrene			16 D					0.92	0.34 J
Fluoranthene	19 D							1.6	0.46 J
Pyrene	14 BD							1.3 B	0.42 J
Butylbenzylphthalate						5.6		0.38 U	0.52 U
Benzo(a)anthracene	9.2 D		5.8 D	7.5				0.91	0.26 J
Chrysene	9.3 D		5.6 D					1.0	0.42 J
Benzo(b))fluoranthene	11 D							1.4	0.33 J
Benzo(k))fluoranthene	6.8 D							0.64	0.24 J
Benzo(a)pyrene	8.2 D		4.2 D				2.8	0.9	0.28 J

Table 3-3 (Continued)
Key Sample Summary
Avenue O and 118th Street Site

Surface Soil (mg/kg)

Substance	Sample Number								
	SS01	SS02	SS03	SS04	SS05	SS11	SS14	SS15 Background	SS16 Background
Indeno(1,2,3-cd)pyrene		1.3	1.6				1.3	0.43	0.13 J
Aroclor-1254							1.6 P	0.19	0.26 UJ
Barium						633		182	77
Copper						294		77.4	34.7

Table 3-3 (Continued)
Key Sample Summary
Avenue O and 118th Street Site

Surface Soil (mg/kg)

Substance	SS06	SS11	SS12	SS13	SS14	SS15 Background	SS16 Background
Manganese			31100 JE*			6390 JE*	296 JE*
Nickel				166	170	55.2	19.3
Silver		16.6				3.8	2.6 B
Vanadium	550		276			70.8	22.8

Table 3-3 (Continued) Key Sample Summary Avenue O and 118th Street Site			
Sediment (mg/kg)			
Substance	Sample Number		
	ST01	ST02	ST03 Background
Benzo(a)anthracene		1.7	0.12 J
Chromium		430	25.8
Lead	682 *		198 *
Magnesium	5120 B	14600	1470 B
Sodium	1660 B		410 B

Notes:

SS	Surface soil sample.
ST	Sediment sample.
U	Substance is undetected; reported value is the sample quantitation limit.
B	For Organics: Reported compound was detected in a blank sample. For Inorganics: Reported value less than the contract required detection limit, but greater than the instrument detection limit.
D	Results are from a diluted sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for the specific analysis.
J	Reported value is estimated.
N	The spiked sample recovery was not within control limits.
P	Used for a pesticide Aroclor target analyte when there is greater than 25% difference for detection concentrations between the two GC columns. The lower of the two values is reported and flagged with a "P."
*	Indicates the matrix spike duplicate results are out of control limits.

4.0 Characterization of Sources

4.1 Introduction

IEPA declared the Avenue O site an illegal dump in 1974. Before it was developed into a residential community, the site was used for the illegal disposal of solid wastes. Numerous dirt trails and roadways were used for random dumping, and evidence of open burning was observed onsite.

During an April 1986 site inspection, FIT personnel observed land development activities and piles of slag-like materials onsite.

The site's history of illegal random dumping activities cause concern that onsite soils may have been exposed to releases of hazardous substances. The analytical results of ESI samples document the existence of contaminated soils at the Avenue O site.

4.2 Waste Source: Contaminated Soil

4.2.1 Description

Analytical results of nine of the thirteen onsite soil samples document observed contamination. Unpaved surfaces within the area encompassed by the nine onsite key sample locations (SS01, SS03, SS04, SS05, SS06, SS11, SS12, SS13, and SS14) defines the area used to approximate the amount of contaminated soil onsite. The total extent of contaminated soil at the Avenue O site is unknown. However, because of housing development activities at the site, it is likely that hazardous substances exists at varying depths and locations throughout the area encompassed by Avenue G, Avenue O, 116th Street, and 118th Street.

The site covers approximately 35 acres. Unpaved areas within the linear geometric perimeters delineated by key onsite soil sample location points constitutes the defined area of contamination. This area includes piles of soil and a soil embankment that runs along the southeastern and eastern site perimeters, unpaved roads, dirt and grassy areas in residential yards and sidewalk areas, and undeveloped lots. A rough estimate of the unpaved area encompassed by the nine onsite key release soil samples (area of contamination) is about 20 percent of the total site area or 7 acres (304,920 square feet).

4.2.2 Waste Characteristics

ESI key sample results show that some soils at the Avenue O site are contaminated. Analysis of onsite soil samples detected semivolatile organic compounds and inorganic hazardous constituents. The majority of semivolatile organic compounds identified in site soils are polynuclear aromatic hydrocarbons (PAHs). PAHs, along with the toxic metals identified in site soils, could be residual end products from prior onsite open burning of waste materials containing petroleum and other hazardous substances.

As indicated in Table 3-3, organic and inorganic contaminants were detected in onsite soil samples collected during the ESI sampling event. The following hazardous substances were identified in the nine key onsite soil samples: 15 semivolatile organic compounds, ranging from 0.75 mg/kg to 19 mg/kg; a PCB compound at 1.6 mg/kg; and six inorganic compounds ranging from 16.6 mg/kg to 31,100 mg/kg.

5.0 Discussion of Migration Pathways

5.1 Introduction

This section includes information useful in analyzing the potential environmental impact of contaminants found at the Avenue O site on the four migration pathways: groundwater, surface water, air, and soil.

5.2 Groundwater

The groundwater pathway was not sampled during the ESI. No documented releases to groundwater have been attributed to the site.

Regional (Northeastern Illinois) and local (Chicago Area) geological information provides descriptions of likely site geology; no site-specific geological information is available. The site was formerly swampland, and fill materials were brought in to develop the area into residential and commercial properties. It is estimated that the fill material is predominantly sandy gravel extending up to 15 feet below ground surface. There are two aquifers of concern, the shallow glacial drift aquifer and the underlying Silurian dolomite bedrock aquifer.

Site geological information from the 1991 PA reassessment report and local geological information suggest that the glacial drift consists primarily of low-permeability clay and silt with sand and gravel lenses, and extends to depths approximately 50 to 65 feet below land surface. The water table is likely to be less than 10 feet below land surface, within the glacial drift and/or fill material. The glacial drift has little potential as an aquifer because of lack of production capability. Silurian dolomite bedrock lies beneath the glacial drift and has a thickness of approximately 400 feet. Beneath the Silurian dolomite is a layer of Maquoketa shale approximately 450-foot-thick. The relatively impermeable shale lies above sandstone aquifers that are used locally as industrial water supplies (Illinois State Geological Survey 1966 and 1971).

All residents within 4 miles of the site are supplied by treated water from Lake Michigan (Illinois State Water Survey 1993). No wells are known to use the glacial drift aquifer within 4 miles of the site. Two wells were identified as using the dolomite aquifer; one private well about 2.4 miles southwest and another in the Cook County Forest Preserve that serves a golf course. The Silurian dolomite aquifer is productive and is likely used for industrial water within surrounding areas. The glacial drift aquifer is assumed to be, at least in part, hydraulically connected to the

Silurian dolomite. There is a potential for hazardous substance migration from shallow groundwater to the surface water bodies within 2 miles of the site; however, groundwater flow directions in the glacial drift and Silurian dolomite aquifers are unknown.

5.3 Surface Water

Because the site has been developed into a residential and commercial area, surface drainage flows into municipal storm sewers; however, it is believed that some of the runoff along the eastern site boundary flows to the wetlands east of the site. In addition, direct dumping of solid wastes into the wetlands area east of the site has been observed.

No overland migration route from the site to any of the major surface water bodies exists within 4 miles of the site.

There is a wetlands area east of the site with a pond. The wetlands area covers about 6 acres and the pond covers about 2 acres. East of the wetlands area is the Eggers Woods Forest Preserve. The surface water pathway is considered to be limited to the natural area, including the Eggers Woods Forest Preserve east of the site (U.S. Department of the Interior, National Wetlands Inventory Maps 1963, 1965). The site boundaries along Avenue H and 117th Street that borders the 6-acre wetlands area, is considered the probable point of entry for surface runoff to the natural area east of the site. This natural area is part of the Wolf Lake Natural Area. There are two endangered plant and two threatened animal species inhabiting the 125-acre natural area east of the site (Illinois Department of Conservation 1993).

No surface water intakes are located along the 15-mile downstream distance limit. It is unlikely that surface ponds within this natural area and the forest preserve are used as fisheries.

During ESI sampling activities, three sediment samples were collected. Two samples were collected from the wetlands east of the site, and the third from the Eggers Woods Forest Preserve, east of the site. The sediment sample from the forest preserve location was used to represent background sediment conditions. Analysis of the sediment samples identified the release of a semivolatile organic compound and three inorganic contaminants to the wetlands east of the site.

5.4 Soil

The site has been developed into a residential and commercial community and is open to the general public. There are approximately 65 full-time workers and additional part-time workers employed onsite at the following facilities: the shopping mall, with two large retail stores, a supermarket, and other smaller retail stores; medical center; fast food restaurant; bank; and fire station. Based on an approximate number of homes for each developed block at the site and the average number of persons per household in Cook County, Illinois (2.67 persons), the estimated onsite residential population is 347 people (U.S. Department of Commerce 1990). There are no known schools or day-care facilities within 200 feet of the site. The residential population within 1 mile of the site is estimated at 7,287 people.

During ESI sampling, 13 onsite soil samples were collected from depths from 6 to 24 inches below ground surface. ESI analytical results indicate the area of affected soil (about 20 percent of total site area) contains releases of 15 semivolatile organic compounds, a PCB compound, and seven inorganic analytes in concentrations that meet observed release criteria. Four of the nine key release soil samples were collected from the soil embankment that runs along the southeast and eastern site boundaries. The depth of contaminated soils is unknown.

The potential exists for onsite residents and onsite workers to come into direct contact with affected soils.

5.5 Air

Site records indicate that open burning was observed onsite; however, there is no known evidence of burning activities that specifically included hazardous materials.

No releases to the air pathway that are attributable to the site were observed during ESI field activities. No air sampling was conducted during the ESI. ESI field activities included air monitoring with a flame ionization detector and showed no readings above background.

The residential population within 4 miles of the site is estimated at approximately 77,319 people (FIT Contractor 1991). There are sensitive environments, including wetlands and habitats for endangered species of plant and animal wildlife, in natural areas and forest preserves within 4 miles of the site. These natural areas include the Wolf Lake Park area, the William W. Powers Conservation Area, the Eggers Woods Forest Preserve, and the Lake Calumet natural area.

6.0 References

Field Investigation Team (FIT) Contractor, 1986a. Potential Hazardous Waste Site Inspection Report, Avenue O and 118th Street, May 19.

FIT Contractor, 1986b. Site Inspection Plan, Avenue O and 118th Street, April 8.

FIT Contractor, 1991. Preliminary Assessment (PA) Reassessment Report, Avenue O and 118th Street, October 7.

Illinois Department of Conservation, Division of Natural Heritage, 1993. Letter on endangered species and habitats, February 16.

Illinois State Geological Survey (ISGS), 1966. Bedrock Aquifers of Northeastern Illinois, Illinois Department of Registration and Education , Circular 406.

ISGS, 1971. Summary of the Geology of the Chicago Area, Illinois Department of Registration and Education, Circular 460.

Illinois Environmental Protection Agency, 1986. Potential Hazardous Waste Site PA Document, Avenue O and 118th Street, January 15.

Illinois State Water Survey, 1993. Computer printouts of Public-Industrial-Commercial Database and private well database.

U.S. Department of Commerce, Bureau of the Census, 1990. Census of Population and Housing, Summary Population and Housing Characteristics, Illinois.

U.S. Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Maps. 7.5 Minute Quadrangles: Lake Calumet (1965) and Calumet City (1963).

U.S. Environmental Protection Agency, 1991. ARCS V Quality Assurance Project Plan, September 27.

U.S. Geological Survey, (USGS), 1991a. Topographic map, Calumet City, Illinois, 7.5 Minute Quadrangle.

USGS, 1991b. Topographic map, Highland, Indiana, 7.5 Minute Quadrangle.

USGS, 1991c. Topographic map, Lake Calumet, Illinois, 7.5 Minute Quadrangle.

USGS, 1980. Topographic map, Whiting, Indiana, 7.5 Minute Quadrangle.

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Appendix A – Site 4-mile radius map

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Appendix A

Avenue O and 118th Street

Site 4-Mile Radius Map

Appendix B

Avenue O and 118th Street

Target Compound List and Target Analyte List

Target Compound List

Volatiles

Chloromethane
Bromomethane
Vinyl Chloride
Chloroethane
Methylene Chloride
Acetone
Carbon Disulfide
1,1-Dichloroethene
1,1-Dichloroethane
1,2-Dichloroethene (total)
Chloroform
1,2-Dichloroethane
2-Butanone
1,1,1-Trichloroethane
Carbon Tetrachloride
Bromodichloromethane
1,2-Dichloropropane
Cis-1,3-Dichloropropene
Trichloroethene
Dibromochloromethane
1,1,2-Trichloroethane
Benzene
trans-1,3-Dichloropropane
Bromoform
4-Methyl-2-pentanone
2-Hexanone
Tetrachloroethene
Toluene
1,1,2,2-Tetrachloroethane
Chlorobenzene
Ethyl benzene
Styrene
Xylenes (total)

Source: Target Compound List for water and soil with low or medium levels of volatile and semivolatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, September 27, 1991.

Target Compound List (Continued)

Semivolatiles

Phenol	Acenaphthene
bis(2-Chloroethyl) ether	2,4-Dinitrophenol
2-Chlorophenol	4-Nitrophenol
1,3-Dichlorobenzene	Dibenzofuran
1,4-Dichlorobenzene	2,4-Dinitrotoluene
1,2-Dichlorobenzene	Diethylphthalate
2-Methylphenol	4-Chlorphenyl-phenyl ether
2,2-oxybis-(1-Chloropropane)*	Fluorene
4-Methylphenol	4-Nitroaniline
N-Nitroso-di-n-dipropylamine	4,6-Dinitro-2-methylphenol
Hexachloroethane	N-Nitrosodiphenylamine
Nitrobenzene	4-Bromophenyl-phenyl ether
Isophorone	Hexachlorobenzene
2-Nitrophenol	Pentachlorophenol
2,4-Dimethylphenol	Phenanthrene
bis(2-Chloroethoxy) methane	Anthracene
2,4-Dichlorophenol	Carbazole
1,2,4-Trichlorobenzene	Di-n-butylphthalate
Naphthalene	Fluoranthene
4-Chloroaniline	Pyrene
Hexachlorobutadiene	Butyl benzyl phthalate
4-Chloro-3-methylhenol	3,3-Dichlorbenzidine
2-Methylnaphthalene	Benzo(a)anthracene
Hexachlorocyclopentadiene	Chrysene
2,4,6-Trichlorophenol	bis(2-Ethylhexyl)phthalate
2,4,5-Trichlorophenol	Di-n-Octyphthalate
2-Chloronephthalene	Benzo(b)fluoranthene
2-Nitroaniline	Benzo(k)fluoranthene
Dimethylphthalate	Benzo(a)pyrene
Acenaphthylene	Indeno(1,2,3-cd)pyrene
2,6-Dinitrotoluene	Dibenzo(a,h)anthracene
3-Nitroaniline	Benzo(g,h,i)perylene

*Previously known by the name of bis(2-chlorousipropyl) ether.

Source: Target Compound List for water and soil with low or medium levels of volatile and semivolatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, September 27, 1991.

Target Compound List (Continued)

Pesticide/PCB

alpha-BHC	4,4-DDT
beta-BHC	Methoxychlor
delta-BHC	Endrin ketone
gamma-BHC (Lindane)	Endrin aldehyde
Heptachlor	alpha-chlordane
Aldrin	gamma-chlordane
Heptachlor epoxide	Toxaphene
Endosulfan I	Aroclor-1016
Dieldrin	Aroclor-1221
4,4-DDE	Aroclor-1232
Endrin	Aroclor-1242
Endosulfan II	Aroclor-1248
4,4-DDD	Aroclor-1254
Endosulfan sulfate	Aroclor-1260

Source: Target Compound List for water and soil containing less than high concentrations of pesticides/aroclors, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, September 27, 1991.

Target Analyte List

Aluminum	Magnesium
Antimony	Manganese
Arsenic	Mercury
Barium	Nickel
Beryllium	Potassium
Cadmium	Selenium
Calcium	Silver
Chromium	Sodium
Cobalt	Thallium
Copper	Vanadium
Iron	Zinc
Lead	Cyanide

Source: Target Analyte List in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, September 27, 1991.

Appendix C

Avenue O and 118th Street

Analytical Results

Appendix C
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Pesticide/PCBs Analysis C-28
Inorganic Analysis C-29

Data Reporting Qualifiers
Definitions for Organic Chemical Data Qualifiers

R - Indicates that the data are unusable. The compound may or may not be present.

U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N - Indicates presumptive evidence of a compound. This flag is only used for TICs where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, the N code is not used.

P - This flag is used for a pesticide Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported and flagged with a "P".

C - This flag applies to results where identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag must be used for a TIC as well as for a positively identified TCL compound.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for the specific analysis. This flag will not apply to pesticide/PCBs analyzed by GC/MS methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and re-analyzed according to the specifications.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

X - Other specific flags may be required to properly define the results. The "X" flags are fully described on the data tables.

Data Reporting Qualifiers
Definitions for Inorganic Chemical Data Qualifiers

R - Indicates that the data are unusable. The compound may or may not be present.

U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

J - Indicates an estimated value.

B - Indicates that the reported value is less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).

E - The reported value is estimated because of the presence of interference.

M - Duplicate injection precision criteria not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis was not within control limits.

+ - Correlation coefficient for the MSA was less than 0.995.

Volatile Organic Analysis for Soil Samples Avenue O and 118th Street Site								
Volatile Compound	Sample Number Concentration in µg/kg							
	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08
Chloromethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Bromomethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Vinyl Chloride	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Chloroethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Methylene Chloride	22 J	19 J	22 J	16 J	7 J	17 J	12 J	10 J
Acetone	11 J	16 J	16 J	20 J	18 J	130 J	16 J	7 J
Carbon Disulfide	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
1,1-Dichloroethene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
1,1-Dichloroethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
1,2-Dichloroethene (total)	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Chloroform	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
1,2-Dichloroethane	7 J	6 J	5 J	12 UJ	12 UJ	13 J	5 J	12 UJ
2-Butanone	26 J	40 J	18 J	68 J	31 J	10 J	12 UJ	12 UJ
1,1,1-Trichloroethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Carbon Tetrachloride	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Bromodichloromethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
1,2-Dichloropropane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
cis-1,3-Dichloropropene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Trichloroethene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Dibromochloromethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
1,1,2-Trichloroethane	3 J	12 UJ	3 J	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Benzene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
trans-1,3-Dichloropropene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Bromoform	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
4-Methyl-2-Pentanone	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
2-Hexanone	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Tetrachloroethene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
1,1,2,2-Tetrachloroethane	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Toluene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Chlorobenzene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Ethylbenzene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Styrene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Xylene (total)	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 UJ	12 UJ	12 UJ
Total Number of TICs*	1	0	1	2	0	0	0	0

[illegible]

* Number, not concentrations, of tentatively identified compounds (TICs).

Volatile Organic Analysis for Soil Samples Avenue O and 118th Street Site							
Volatile Compound	Sample Number Concentration in µg/kg						
	SS09	SS11	SS12	SS13	SS14	SS15 Background	SS16 Background
Chloromethane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Bromomethane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Vinyl Chloride	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Chloroethane	12 UJ	11 UJ	11 UJ	11 UJ	11 UJ	12 UJ	16 UJ
Methylene Chloride	28 J	26	13	18	60	3 J	30
Acetone	10 J	63 J	12 UB	11 UJ	33 J	12 UJ	16 UJ
Carbon Disulfide	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
1,1-Dichloroethene	12 UJ	11 UJ	11 U	11 U	11 U	12 UJ	16 U
1,1-Dichloroethane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
1,2-Dichloroethene (total)	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Chloroform	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
1,2-Dichloroethane	5 J	11 U	11 U	11 U	11 U	12 UJ	16 U
2-Butanone	12 UJ	11 J	11 U	11 UJ	11 UJ	12 UJ	16 UJ
1,1,1-Trichloroethane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Carbon Tetrachloride	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Bromodichloromethane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
1,2-Dichloropropane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
cis-1,3-Dichloropropene	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Trichloroethene	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Dibromochloromethane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
1,1,2-Trichloroethane	3 J	11 U	11 U	11 U	11 U	12 UJ	16 U
Benzene	12 UJ	11 UJ	11 U	11 U	11 U	12 UJ	16 U
trans-1,3-Dichloropropene	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Bromoform	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
4-Methyl-2-Pentanone	12 UJ	11 U	11 U	11 U	11 U	3 J	16 U
2-Hexanone	12 UJ	11 U	11 U	11 U	11 U	7 J	16 U
Tetrachloroethene	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
1,1,2,2-Tetrachloroethane	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Toluene	12 UJ	11 UJ	11 U	11 U	11 U	12 UJ	16 U
Chlorobenzene	12 UJ	11 UJ	11 U	11 U	11 U	12 UJ	16 U
Ethylbenzene	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Styrene	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Xylene (total)	12 UJ	11 U	11 U	11 U	11 U	12 UJ	16 U
Total Number of TICs*	0	0	1	0	0	0	0

SS-vol.wk4

* Number, not concentrations, of tentatively identified compounds (TICs).

Volatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS01		
Unknown	17.93	8 J
Sample SS03		
Ethane, 1,1,2-trichloro-1,2,	4.13	8 JN
Sample SS04		
Unknown	12.00	9 J
Naphthalene	14.27	23 JNR
Sample SS12		
Unknown	4.52	9 J

ss-tic.wk4

Semivolatile Organic Analysis for Soil Samples Avenue O and 118th Street Site								
Semivolatile Compound	Sample Number Concentration in µg/kg							
	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08
Phenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
bis(2-Chloroethyl)Ether	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2-Chlorophenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
1,3-Dichlorobenzene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
1,4-Dichlorobenzene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
1,2-Dichlorobenzene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2-Methylphenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2,2'-oxybis(1-Chloropropane)	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
4-Methylphenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
n-Nitroso-Di-n-Propylamine	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Hexachloroethane	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Nitrobenzene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Isophorone	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2-Nitrophenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2,4-Dimethylphenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
bis(2-Chloroethoxy)Methane	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2,4-Dichlorophenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
1,2,4-Trichlorobenzene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Naphthalene	1500	420	2100	390 U	590	240 J	450	270 J
4-Chloroaniline	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Hexachlorobutadiene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
4-Chloro-3-Methylphenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2-Methylnaphthalene	320 J	90 J	1400	83 J	100 J	310 J	150 J	94 J
Hexachlorocyclopentadiene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2,4,6-Trichlorophenol	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2,4,5-Trichlorophenol	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U
2-Chloronaphthalene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
2-Nitroaniline	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U
Dimethylphthalate	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Acenaphthylene	2300	480	130 J	390 U	750	120 J	120 J	410
2,6-Dinitrotoluene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
3-Nitroaniline	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U
Acenaphthene	160 J	86 J	2000	110 J	410 U	100 J	240 J	130 J
2,4-Dinitrophenol	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U

Semivolatile Organic Analysis for Soil Samples Avenue O and 118th Street Site								
Semivolatile Compound	Sample Number Concentration in µg/kg							
	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08
4-Nitrophenol	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U
Dibenzofuran	460	160 J	1600	98 J	150 J	220 U	150 J	120 J
2,4-Dinitrotoluene	390 U	400 U	390 U	390 U	410 U	420 J	390 U	390 U
Diethylphthalate	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
4-Chlorophenyl-phenylether	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Fluorene	960	340 J	3200	160 J	250 J	260 U	300 J	250 J
4-Nitroaniline	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U
4,6-Dinitro-2-Methylphenol	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U
n-Nitrosodiphenylamine	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
4-Bromophenyl-phenylether	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Hexachlorobenzene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Pentachlorophenol	940 U	980 U	950 U	950 U	1000 U	1000 U	950 U	950 U
Phenanthrene	7900 D	2300	16000 D	1400	1900	2200 U	2900	1900
Anthracene	2700	790	5300 D	360 J	740	710	710	670
Carbazole	570	180 J	1600	140 J	160 J	340 J	320 J	150 J
di-n-Butylphthalate	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Fluoranthene	19000 D	4500 D	13000 D	1700	4100 D	2500	5300 D	4300 D
Pyrene	14000 BD	3400 BD	9700 BD	1400 B	3000 B	1900 B	3900 BD	3900 BD
Butylbenzylphthalate	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
3,3'-Dichlorobenzidine	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Benzo(a)Anthracene	9200 D	1800	5800 D	7500	2100	1000	2200	2200
Chrysene	9300 D	1900	5600 D	800	2000	1400	2500	2100
bis(2-Ethylhexyl)Phthalate	390 JB	400 UJB	390 UJB	390 UJB	1100 B	470 B	390 UJB	210 JB
di-n-Octyl Phthalate	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Benzo(b)Fluoranthene	11000 D	2000	4200 D	630	2400	1600	3200	3000
Benzo(k)Fluoranthene	6800 D	810	890	530	1000	640	840	940
Benzo(a)Pyrene	8200 D	1900	4200 D	740	1800	990	1900	2200
Indeno(1,2,3-cd)Pyrene	3600 DJ	1300	1600	330 J	1000	420 J	770	840
Dibenzo(a,h)Anthracene	390 U	400 U	390 U	390 U	410 U	420 U	390 U	390 U
Benzo(g,h,i)Perylene	230 J	670	230 J	180 J	120 J	110 J	380 J	520
Total Number of TICs*	13	19	20	20	18	6	24	5

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* Number, not concentrations, of tentatively identified compounds (TICs).

Semivolatile Organic Analysis for Soil Samples Avenue O and 118th Street Site							
Semivolatile Compound	Sample Number Concentration in µg/kg						
	SS09	SS11	SS12	SS13	SS14	SS15 Background	SS16 Background
Phenol	390 U	550 J	370 U	370 U	370 U	380 U	520 U
bis(2-Chloroethyl)Ether	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2-Chlorophenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
1,3-Dichlorobenzene	390 U	570 U	370 U	370 U	370 U	380 U	520 U
1,4-Dichlorobenzene	390 U	760 J	370 U	370 U	370 U	380 U	520 U
1,2-Dichlorobenzene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2-Methylphenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2,2'-oxybis(1-Chloropropane)	390 U	760 U	370 U	370 U	370 U	380 U	520 U
4-Methylphenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
n-Nitroso-Di-n-Propylamine	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Hexachloroethane	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Nitrobenzene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Isophorone	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2-Nitrophenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2,4-Dimethylphenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
bis(2-Chloroethoxy)Methane	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2,4-Dichlorophenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
1,2,4-Trichlorobenzene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Naphthalene	270 J	840	360 J	300 J	400	94 J	150 J
4-Chloroaniline	390 U	760 UJ	370 UJ	370 UJ	370 UJ	380 U	520 UJ
Hexachlorobutadiene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
4-Chloro-3-Methylphenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2-Methylnaphthalene	140 J	870	190 J	250 J	190 U	380 U	150 J
Hexachlorocyclopentadiene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2,4,6-Trichlorophenol	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2,4,5-Trichlorophenol	950 U	1800 U	890 U	890 U	900 U	930 U	1300 U
2-Chloronaphthalene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
2-Nitroaniline	950 U	1800 U	890 U	890 U	900 U	930 U	1300 U
Dimethylphthalate	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Acenaphthylene	240 J	760 U	110 J	370 U	470	380 U	520 U
2,6-Dinitrotoluene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
3-Nitroaniline	950 U	1800 U	890 U	890 U	900 U	930 U	1300 U
Acenaphthene	110 J	270 J	370 U	370 U	150 J	88 J	520 U
2,4-Dinitrophenol	950 U	1800 U	890 U	890 U	900 U	930 U	1300 U

Semivolatile Organic Analysis for Soil Samples Avenue O and 118th Street Site							
Semivolatile Compound	Sample Number Concentration in µg/kg						
	SS09	SS11	SS12	SS13	SS14	SS15 Background	SS16 Background
4-Nitrophenol	950 U	1800 U	890 U	890 U	900 U	930 U	1300 U
Dibenzofuran	100 J	370 J	90 J	81 J	140 J	380 U	520 U
2,4-Dinitrotoluene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Diethylphthalate	390 U	760 U	370 U	370 U	370 U	380 U	520 U
4-Chlorophenyl-phenylether	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Fluorene	140 J	400 J	92 J	370 U	160 J	89 J	520 U
4-Nitroaniline	950 U	1800 U	890 U	890 U	900 U	930 U	1300 U
4,6-Dinitro-2-Methylphenol	950 U	1800 U	890 U	890 U	900 U	930 U	1300 U
n-Nitrosodiphenylamine	390 U	760 U	370 U	370 U	370 U	380 U	520 U
4-Bromophenyl-phenylether	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Hexachlorobenzene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Pentachlorophenol	950 U	1800 UJ	890 U	890 U	900 U	930 U	1300 U
Phenanthrene	1300	470 J	990	850	1400	920	340 J
Anthracene	360 J	490 J	220 J	180 J	550	200 J	520 U
Carbazole	110 J	380 J	99 J	94 J	160 J	110 J	520 U
di-n-Butylphthalate	85 J	760 U	370 U	370 U	370 U	380 U	520 U
Fluoranthene	2200	2400	1600	1200	3500 D	1600	460 J
Pyrene	1800 B	2000 J	1200	890	2800	1300 B	420 J
Butylbenzylphthalate	390 U	5600	370 U	370 U	370 U	380 U	520 U
3,3'-Dichlorobenzidine	390 U	760 UJ	370 UJ	370 UJ	370 UJ	380 U	520 UJ
Benzo(a)Anthracene	1100	1300	740	570	2300	910	260 J
Chrysene	1200	1500	860	680	2400	1000	420 J
bis(2-Ethylhexyl)Phthalate	390 UJB	2200 B	370 UJB	370 UJB	550 UB	380 UJB	520 UJB
di-n-Octyl Phthalate	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Benzo(b)Fluoranthene	1500	960	920	680	4200 D	1400	330 J
Benzo(k)Fluoranthene	760	1100 J	1100 J	800 J	1500 D	640	240 J
Benzo(a)Pyrene	1200	1100	760	420	2800	900	280 J
Indeno(1,2,3-cd)Pyrene	500	860	360 J	210 J	1300	430	130 J
Dibenzo(a,h)Anthracene	390 U	760 U	370 U	370 U	370 U	380 U	520 U
Benzo(g,h,i)Perylene	350 J	1000	210 J	370 U	320 J	270 J	520 U
Total Number of TICs*	26	2	3	23	23	23	23

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* Number, not concentrations, of tentatively identified compounds (TICs).

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS01		
Unknown	12.67	270 J
Unknown aromatic	13.25	260 J
Dibenzothiophene	13.45	170 JN
Unknown	13.88	240 J
Unknown PAH	14.28	380 J
Unknown PAH	14.63	150 J
Unknown PAH	14.68	190 J
Unknown PAH	14.87	800 J
2-Phenylnaphthalene	15.23	1400 JN
Unknown PAH	16.27	130 J
Unknown PAH	17.20	100 J
Unknown PAH	18.47	780 J
Unknown PAH	21.10	780 J
Sample SS02		
Adol condensation	5.58	400 JBA
Aldol condensation	5.85	330 JBA
Unknown hydrocarbon	7.20	580 JB
Unknown hydrocarbon	10.85	260 J
Unknown hydrocarbon	12.65	100 J
9H-Fluoren-9-one	13.28	230 JN
Unknown hydrocarbon	13.47	90 J
Unknown hydrocarbon	14.28	390 J
Unknown PAH	14.62	120 J
Unknown PAH	14.67	280 J
Unknown PAH	14.83	850 J
Unknown PAH	15.88	1800 J
Unknown PAH	16.20	830 J
Unknown PAH	17.13	900 J
Unknown PAH	18.43	1200 J
Unknown PAH	21.07	1200 J
Unknown PAH	21.37	580 J
Unknown	24.68	1900 J
Unknown	26.42	970 J

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS03		
Unknown PAH	14.28	110 J
Unknown PAH	14.65	170 J
Unknown PAH	14.72	140 J
Unkonwn PAH	14.77	93 J
Unknown PAH	14.88	480 J
Unknown PAH	15.23	260 J
Unknown PAH	15.82	370 J
Unknown PAH	16.95	300 J
Unknown PAH	17.18	460 J
Unknown PAH	17.30	390 J
Unknown PAH	17.37	370 J
Unknown PAH	17.60	1100 J
Unknown PAH	18.37	190 J
Unknown PAH	18.45	720 J
Unknown PAH	19.13	280 J
Unknown	19.28	400 J
Unknown	19.38	480 J
Unknown PAH	19.68	440 J
Unknown PAH	19.98	1900 J
Unknown PAH	23.55	240 J
Sample SS04		
Unknown hydrocarbon	9.15	670 J
Unknown hydrocarbon	9.60	460 J
Unknown hydrocarbon	9.98	190 J
Unknown aromatic	10.13	270 J
Unknown hydrocarbon	10.52	220 J
Benzene, 1-isopentyl-2,4,5-t	10.68	170 JN
Unknown hydrocarbon	10.87	270 J
Unkonwn hydrocarbon	12.17	350 J
Unknown hydrocarbon	12.67	860 J
Unknown hydrocarbon	13.07	910 J
Unkonwn hydrocarbon	13.47	250 J
Unknown hydrocarbon	13.55	320 J
Unknown hydrcarbon	14.30	1800 J
Unknown PAH	14.85	1000 J
Unknown hydrocarbon	15.10	2800 J
Unknown hydrocarbon	15.88	510 J
Unknown hydrocarbon	17.32	830 J
Unknown hydrocarbon	18.67	86 J
Unknown	19.85	270 J
Unknown acid	20.18	620 J

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS05		
Aldol condensation	5.58	590 JBA
Aldol condensation	5.85	270 JBA
Unknown hydrocarbon	7.20	660 JB
Unknown hydrocarbon	9.00	180 J
Unknown hydrocarbon	10.52	200 J
Unknown hydrocarbon	10.83	360 J
Unknown	11.10	140 J
Unknown PAH	13.28	99 J
Unkonwn PAH	14.27	120 J
Unknown PAH	14.67	180 J
Unknown PAH	14.83	520 J
Unknown PAH	15.22	1500 J
Unknown PAH	16.20	750 J
Unknown	17.88	330 J
Unknown PAH	18.43	350 J
Unknown PAH	21.07	580 J
Unknown hydrocarbon	22.15	1300 J
Unknown	23.45	1000 J
Sample SS06		
Aldol condensation	3.98	850 JA
Unknown hydrocarbon	12.67	980 J
Unknown	13.30	1800 J
Unknown hydrocarbon	14.32	4300 J
Unknown hydrocarbon	15.90	5900 J
Unknown	17.18	3400 J
Sample SS07		
Aldol condensation	5.58	420 JBA
Aldol condensation	5.85	120 JBA
Aldol condensation	6.13	120 JA
Unknown hydrocarbon	6.37	220 J
Unknown hydrocarbon	7.20	850 JB
Unknown hydrocarbon	7.43	420 J
Unknown hydrocarbon	9.00	240 J
Unknown hydrocarbon	9.18	110 J
Unknown hydrocarbon	9.22	91 J
Unknown hydrocarbon	9.37	120 J
Unknown PAH	9.48	100 J
Unknown hydrocarbon	9.98	180 J
Unknown PAH	10.43	220 J
Unknown hydrocarbon	10.83	450 J
Unknown hydrocarbon	11.22	160 J
Unknown PAH	11.33	230 J

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS07 (Continued)		
Unknown	12.07	160 J
Unknown hydrocarbon	12.60	99 J
Unknown hydrocarbon	12.72	83 J
Dibenzothiophene	13.45	110 JN
Unknown hydrocarbon	14.30	96 J
Unknown PAH	14.68	170 J
Unknown PAH	14.85	710 J
Unknown PAH	17.13	130 J
Sample SS08		
Unknown hydrocarbon	7.20	900 JB
Unknown PAH	14.67	200 J
Unknown	14.85	2300 J
Unknown	15.15	2300 J
Unkonwn PAH	16.22	1500 J
Sample SS09		
Aldol condensation	5.60	580 JBA
Aldol condensation	5.87	200 JNA
Aldol condensation	6.13	130 JA
Aldol condensation	6.37	190 JA
Unknown hydrocarbon	7.20	910 J
Unknown	7.43	350 J
Unknown hydrocarbon	7.68	94 J
Unknown hydrocarbon	8.72	91 J
Unknown hydrocarbon	9.00	170 J
Unknown hydrocarbon	9.15	130 J
Unknown hydrocarbon	9.98	180 J
Unknown PAH	10.27	85 J
Unknown PAH	10.43	230 J
Unknown hydrocarbon	10.52	87 J
Unknown hydrocarbon	10.85	260 J
Unknown PAH	11.33	270 J
Unknown PAH	11.53	84 J
Unknown hydrocarbon	11.73	290 J
Unknown hydrocarbon	12.17	110 J
Unknown hydrocarbon	12.62	410 J
Unknown acid	13.15	120 J
Unknown hydrocarbon	13.47	210 J
Unknown hydrocarbon	14.30	110 J
Unknown PAH	14.62	88 J
Unknown PAH	14.67	210 J
Unknown PAH	14.83	2400 J

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS11		
Unknown hydrocarbon	13.52	1500 J
Unknown hydrocarbon	20.08	150000 J
Sample SS12		
Unknown hydrocarbon	14.27	740 J
Unknown PAH	14.83	1200 J
Unknown hydrocsarbon	15.85	5000 J
Sample SS13		
Aldol condensation	5.55	670 JBA
Aldol condensation	5.80	150 JBA
Aldol condensation	6.10	150 JA
Unknown hydrocarbon	7.17	530 JB
Unknown hydrocarbon	7.22	180 J
Unknown hydrocarbon	7.40	340 JB
Unknown hydrocarbon	8.98	180 J
Unknown hydrocarbon	9.13	150 J
Unknown PAH	9.47	130 J
Unknown hydrcarbon	9.95	210 J
Unknown PAH	10.38	310 J
Unknown hydrocarbon	10.83	370 J
Unknown hydrcarbon	11.70	270 J
Unknown PAH	11.88	160 J
Unknown hydrocarbon	12.58	360 J
Unknown hydrocarbon	12.63	130 J
Unknown hydrocarbon	12.70	120 J
Unknown	12.97	160 J
Unknown PAH	13.18	210 J
Unknown hydrocarbon	13.43	130 J
Unknown hydrocarbon	14.27	520 J
Unknown PAH	14.83	600 J
Unknown hydrocarbon	15.85	500 J
Sample SS14		
Unknown hydrocarbon	14.27	430 J
Unknown PAH	14.83	1500 J
Unknown PAH	15.73	2300 J
Unknown hydrocarbon	15.87	520 J
Unknown acid	16.28	490 J
Unknown PAH	18.47	5500 J
Unknown PAH	18.97	670 J

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS15-Background		
Aldol condensation	5.62	880 JBA
Aldol condensation	5.87	300 JBA
Aldol condensation	6.15	170 JA
Unknown hydrocarbon	7.22	790 J
Unknown hydrocarbon	8.47	170 J
Unknown hydrocarbon	9.00	150 J
Unknown hydrocarbon	9.15	260 J
Unknown hydrocarbon	9.30	160 J
Unknown hydrocarbon	9.37	150 J
Unknown hydrocarbon	9.98	300 J
Unknown hydrocarbon	10.52	230 J
Unknown hydrocarbon	10.85	350 J
Unknown PAH	11.33	210 J
Unknown hydrocarbon	11.73	210 J
Unknown hydrocarbon	12.17	240 J
Unknown hydrocarbon	12.62	130 J
Unknown hydrocarbon	12.67	290 J
Unknown	13.30	440 J
Unknown hydrocarbon	13.47	100 J
Unknown hydrocarbon	13.55	130 J
Unknown hydrocarbon	14.30	180 J
Unknown PAH	14.68	280 J
Unknown	14.85	2000 J
Sample SS16-Background		
Aldol condensation	5.20	310 JA
Aldol condensation	5.62	2200 JA
Aldol condensation	6.12	220 JA
Unknown hydrocarbon	7.18	610 J
Unknown acid	13.73	820 J
Unknown acid	14.53	480 J
Hexadecanoic acid	14.90	5900 JN
Unknown	15.22	1600 J
Unknown acid	15.33	1100 J
Unknown	15.55	2100 J
Unknown acid	16.30	280 J
Unknown	17.03	150 J
Mitotane	17.42	110 JN
Unknown	17.80	450 J
Heptadecane	19.88	750 JN
Unknown	20.73	240 J
Unknown hydrocarbon	21.05	1100 J
Unknown hydrocarbon	22.13	230 J
Unknown	22.28	500 J

Semivolatile Organic Analysis for Soil Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS16-Background (Continued)		
Unknown hydrocarbon	22.93	160 J
Unknown	23.42	720 J
Unknown	24.88	160 J
Unknown	25.77	300 J

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Pesticide/PCB Analysis for Soil Samples Avenue O and 118th Street Site								
Pesticide/PCB	Sample Number Concentrations in µg/kg							
	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08
Alpha-BHC	10 RU	10 RUJ	10 RUJ	2.0 U	11 RU	2.2 U	10 RUJ	2.0 U
Beta-BHC	10 RU	10 RUJ	10 RUJ	2.0 U	11 RU	2.2 U	10 RUJ	2.0 U
Delta-BHC	10 RU	10 RUJ	10 RUJ	2.0 U	11 RU	2.2 U	10 RUJ	2.0 U
Gamma-BHC (Lindane	10 RU	10 RUJ	10 RUJ	2.0 U	11 RU	2.2 U	10 RUJ	2.0 U
Heptachlor	10 RU	10 RUJ	10 RUJ	2.0 U	11 RU	2.2 U	10 RUJ	2.0 U
Aldrin	10 RU	10 RUJ	10 RUJ	2.0 U	11 RU	2.2 U	10 RUJ	2.0 U
Heptachlor Epoxide	10 RU	22 JP	11 JP	2.0 U	11 RU	2.6 P	10 RUJ	2.0 U
Endosulfan I	10 RU	10 RUJ	10 RUJ	2.0 U	11 RU	2.2 U	10 RUJ	2.0 U
Dieldrin	19 RU	120 JP	20 JP	3.9 U	21 RU	4.3 P	20 RUJ	16 P
4,4'-DDE	86 J	98 J	230 JP	3.9 U	180 JP	39	58 JP	23 P
Endrin	19 RU	20 RUJ	20 RUJ	3.9 U	21 RU	6.6 P	72 JP	8.2 P
Endosulfan II	19 RU	20 RUJ	20 RUJ	3.9 U	21 RU	4.6 P	20 RUJ	6.8 P
4,4'-DDD	43 JP	20 JP	50 JP	3.9 U	28 J	5.7 P	35 JP	16
Endosulfan Sulfate	53 JP	24 P	40 JP	3.9 U	21 RU	6.8 P	20 RUJ	14 P
4,4'-DDT	190 JP	110 JP	210 JP	3.9 U	64 JP	23 P	87 JP	47 P
Methoxychlor	100 RU	100 RUJ	100 RUJ	20 U	110 RU	22 U	100 RUJ	20 U
Endrin Ketone	19 RU	20 RUJ	20 RUJ	3.9 U	21 RU	4.2 U	20 RUJ	3.9 U
Endrin Aldehyde	19 RU	20 RUJ	20 RUJ	3.9 U	21 RU	4.2 U	20 RUJ	3.9 U
Alpha-Chlordane	16 JP	66 J	120 JP	3.1	11 RU	4.5 P	21 JP	12 P
Gamma-Chlordane	10 RU	50 J	46 JP	2.0 U	11 RU	2.2 U	10 RUJ	6.1
Toxaphene	1000 RU	1000 RUJ	1000 RUJ	200 U	1100 RU	220 U	1000 RUJ	200 U
Aroclor-1016	190 RU	200 RUJ	200 RUJ	39 U	210 RU	42 U	200 RUJ	39 U
Aroclor-1221	390 RU	410 RUJ	400 RUJ	80 U	420 RU	86 U	400 RUJ	80 U
Aroclor-1232	190 RU	200 RUJ	200 RUJ	39 U	210 RU	42 U	200 RUJ	39 U
Aroclor-1242	190 RU	200 RUJ	200 RUJ	39 U	210 RU	42 U	200 RUJ	39 U
Aroclor-1248	190 RU	200 RUJ	200 RUJ	39 U	210 RU	42 U	200 RUJ	39 U
Aroclor-1254	190 RU	200 RUJ	200 RUJ	39 U	210 RU	42 U	200 RUJ	39 U
Aroclor-1260	190 RU	200 RUJ	200 RUJ	39 U	210 RU	42 U	200 RUJ	39 U

Pesticide/PCB Analysis for Soil Samples Avenue O and 118th Street Site							
Pesticide/PCB	Sample Number Concentrations in µg/kg						
	SS09	SS11	SS12	SS13	SS14	SS15 Background	SS16 Background
Alpha-BHC	2.0 U	2.0 UJ	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Beta-BHC	2.0 U	2.0 UJ	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Delta-BHC	2.0 U	2.0 UJ	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Gamma-BHC (Lindane	2.0 U	2.0 UJ	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Heptachlor	2.0 U	2.0 UJ	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Aldrin	2.0 U	2.0 UJ	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Heptachlor Epoxide	2.0 U	4.6 JP	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Endosulfan I	2.0 U	2.0 UJ	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Dieldrin	3.9 P	3.8 UJ	7.3 RU	7.2 JP	19 P	5.4 P	26 UJ
4,4'-DDE	31	12 J	16	18 JP	91 P	15 P	600 D
Endrin	3.9 U	8.0 JP	7.3 RU	14 JP	50 P	6.7 P	26 UJ
Endosulfan II	3.9 U	9.1 JP	7.3 RU	7.3 RUJ	19 RU	6.5	26 UJ
4,4'-DDD	26	7.6 JP	24 P	22 JP	63 P	9.0 P	140 J
Endosulfan Sulfate	5.5 P	3.8 UJ	7.3 RU	7.3 RUJ	19 RU	8.6 P	26 UJ
4,4'-DDT	76	13 JP	71	72 J	200 P	9.6 P	350 J
Methoxychlor	63	20 UJ	38 RU	38 RUJ	96 RU	20 U	130 UJ
Endrin Ketone	3.9 U	3.8 UJ	7.3 RU	7.3 RUJ	19 RU	3.8 U	26 UJ
Endrin Aldehyde	3.9 U	3.8 UJ	7.3 RU	7.3 RUJ	19 RU	3.8 U	26 UJ
Alpha-Chlordane	18 P	30 JP	6.5 P	6.6 P	9.6 RU	6.1 P	13 UJ
Gamma-Chlordane	5.6 P	12 J	3.8 RU	3.8 RUJ	9.6 RU	2.0 U	13 UJ
Toxaphene	200 U	200 UJ	380 RU	380 RUJ	960 RU	200 U	1300 UJ
Aroclor-1016	39 U	38 UJ	73 RU	73 RUJ	190 RU	38 U	260 UJ
Aroclor-1221	80 U	77 UJ	150 RU	150 RUJ	380 RU	78 U	530 UJ
Aroclor-1232	39 U	38 UJ	73 RU	73 RUJ	190 RU	38 U	260 UJ
Aroclor-1242	39 U	38 UJ	73 RU	73 RUJ	190 RU	38 U	260 UJ
Aroclor-1248	39 U	38 UJ	73 RU	73 RUJ	190 RU	38 U	260 UJ
Aroclor-1254	39 U	38 UJ	73 RU	73 RUJ	1600 P	190	260 UJ
Aroclor-1260	39 U	38 UJ	73 RU	73 RUJ	190 RU	38 U	260 UJ

Inorganic Analysis for Soil Samples Avenue O and 118th Street Site					
Metals and Cyanide	Sample Number Concentrations in mg/kg				
	SS01	SS02	SS03	SS04	SS05
Aluminum	7930 *	10800 *	12100 *	12300 *	6090 *
Antimony	11.8 U	13.0 U	12.6 U	13.3 U	13.2 U
Arsenic	9.6 *	16.3 *	7.4 *	10.0 *	11.5 *
Barium	241	103	216	51.8	53.1
Beryllium	1.1 JNB	0.80 JNB	1.6 JN	0.78 JNB	0.4 JNB
Cadmium	3.8 JN	2.7 JN	1.1 JNB	1.4 JN	1.1 JNB
Calcium	79700	65600	91300	64400	26500
Chromium	503 JE	131 JE	36.1 JE	66.3 JE	34.0 JE
Cobalt	5.4 B	9.4 B	3.4 B	12.7	6.7 B
Copper	88.2	45.4	14.7	35.3	30.9
Iron	68100	28400	13900	27300	22400
Lead	326	164	113	27.2	49.5
Magnesium	18100	27300	19000	27500	12800
Manganese	9940 JE*	2820 JE*	1390 JE*	1680 JE*	761 JE*
Mercury	0.35 J*	0.12 UJ*	0.12 J*	0.13 UJ*	0.12 UJ*
Nickel	38.3	30.2	11.4	35.4	22.1
Potassium	1120	2810	1070 B	3410	919 B
Selenium	1.2	1.2 U	1.2	1.3 U	1.2 U
Silver	2.9	1.5 U	1.4 U	1.5 U	1.5 U
Sodium	489 B	424 B	483 B	299 B	572 B
Thallium	1.6 U*	1.7 U*	1.7 U*	3.7 *	2.3 B*
Vanadium	107	47.8	20.2	53.6	19.3
Zinc	508 JE	279 JE	208 JE	81.7 JE	127 JE
Cyanide	8.4 J*	0.77 J*	9.9 J*	0.76 J*	1.2 J*

Inorganic Analysis for Soil Samples Avenue O and 118th Street Site					
Metals and Cyanide	Sample Number Concentrations in mg/kg				
	SS06	SS07	SS08	SS09	SS11
Aluminum	7120 *	8480 *	10100 *	7950 *	17400 *
Antimony	12.3 U	12.6 U	12.7 U	12.3 U	11.6 U
Arsenic	5.7 *	7.8 *	16.7 *	8.6 *	7.0 *
Barium	57.2	123	187	99.1	633
Beryllium	2.3 JN	0.98 JNB	1.5 JN	1.2 JN	0.22 UJN
Cadmium	2.2 JN	1.3 JN	2.5 JN	2.4 JN	4.1 JN
Calcium	238000	84600	139000	60300	72100
Chromium	685 JE	44.1 JE	162 JE	369 JE	508 JE
Cobalt	3.3 B	5.3 B	7.8 B	7.2 B	13.6
Copper	23.4	30.9	132	83.2	294
Iron	160000	20400	71600	49900	124000
Lead	84.2	112	287	162	642
Magnesium	22700	35800	62300	21700	26300
Manganese	26000 JE*	1270 JE*	3570 JE*	5350 JE*	9590 JE*
Mercury	0.12 UJ*	0.41 J*	0.12 UJ*	0.25 J*	1.1 J*
Nickel	23.9	14.7	71.8	130	98.0
Potassium	768 B	1230	1180 B	790 B	760 B
Selenium	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U
Silver	4.4	1.4 U	2.5	1.9 B	16.6
Sodium	530 B	448 B	532 B	403 B	545 B
Thallium	1.6 U*	1.7 U*	2.3 B*	1.8 B*	2.9 *
Vanadium	550	25.6	34.9	38.9	50.7
Zinc	152 JE	187 JE	856 JE	370 JE	1080 JE
Cyanide	3.5 J*	11.7 J*	9.6 J*	6.4 J*	3.2 J*

Inorganic Analysis for Soil Samples Avenue O and 118th Street Site					
Metals and Cyanide	Sample Number Concentrations in mg/kg				
	SS12	SS13	SS14	SS15 Background	SS16 Background
Aluminum	10100 *	9280 *	11100 *	16800 *	5730 *
Antimony	11.9 U	11.7 U	12.0 U	12.6 U	16.7 U
Arsenic	3.2 *	11.9 *	18.3 *	7.2 *	15.1 *
Barium	221	120	178	182	77.0
Beryllium	1.7 JN	1.3 JN	1.9 JN	1.7 JN	0.56 JNB
Cadmium	1.7 JN	2.6 JN	9.5 JN	1.6 JN	2.3 JN
Calcium	157000	65100	65500	114000	7020
Chromium	1240 JE	274 JE	436 JE	557 JE	29.7 JE
Cobalt	5.2 B	9.4 B	11.7	10.4 B	4.5 B
Copper	74.7	149	204	77.4	34.7
Iron	69400	115000	157000	65400	22600
Lead	155	203	406	250	136
Magnesium	26700	15900	13400	29400	1760
Manganese	31100 JE*	2460 JE*	4150 JE*	6390 JE*	296 JE*
Mercury	0.40 J*	0.22 J*	0.32 J*	0.37 J*	0.16 UJ*
Nickel	89.6	166	170	55.2	19.3
Potassium	958 B	977 B	1310	2920	552 B
Selenium	3.7	1.1 U	1.1 U	1.2 U	2.1
Silver	3.0	3.2	4.2	3.8	2.6 B
Sodium	380 B	335 B	432 B	1390	286 B
Thallium	1.6 U*	4.2 *	5.2 *	4.3 *	2.3 B*
Vanadium	276	17.8	35.3	70.8	22.8
Zinc	195 JE	412 JE	1330 JE	197 JE	290 JE
Cyanide	5.3 J*	4.6 J*	9.3 J*	1.6 J*	0.79 UJ*

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Volatile Organic Analysis for Sediment Samples Avenue O and 118th Street Site			
Volatile Compound	Sample Number Concentration in µg/kg		
	ST01	ST02	ST03 Background
Chloromethane	100 U	40 U	32 U
Bromomethane	100 U	40 U	32 U
Vinyl Chloride	100 U	40 U	32 U
Chloroethane	100 U	40 U	32 U
Methylene Chloride	100 UJ	40 UJ	32 UJ
Acetone	250 J	110 UJ	32 UJ
Carbon Disulfide	100 U	40 U	32 U
1,1-Dichloroethene	100 U	40 U	32 U
1,1-Dichloroethane	100 U	40 U	32 U
1,2-Dichloroethene (total)	100 U	40 U	32 U
Chloroform	100 U	40 U	32 U
1,2-Dichloroethane	100 U	40 U	32 U
2-Butanone	100 UJ	40 UJ	32 UJ
1,1,1-Trichloroethane	100 U	40 U	32 U
Carbon Tetrachloride	100 U	40 U	32 U
Bromodichloromethane	100 U	40 U	32 U
1,2-Dichloropropane	100 U	40 U	32 U
cis-1,3-Dichloropropene	100 U	40 U	32 U
Trichloroethene	100 U	40 U	32 U
Dibromochloromethane	100 U	40 U	32 U
1,1,2-Trichloroethane	100 U	40 U	32 U
Benzene	100 U	40 U	32 U
trans-1,3-Dichloropropene	100 U	40 U	32 U
Bromoform	100 U	40 U	32 U
4-Methyl-2-Pentanone	100 UJ	40 UJ	32 UJ
2-Hexanone	100 UJ	40 UJ	32 UJ
Tetrachloroethene	100 U	40 U	32 U
1,1,2,2-Tetrachloroethane	100 U	40 U	32 U
Toluene	100 U	40 U	32 U
Chlorobenzene	100 U	40 U	32 U
Ethylbenzene	100 U	40 U	32 U
Styrene	100 U	40 U	32 U
Xylene (total)	100 U	40 U	32 U
Total Number of TICS *	0	0	0

* Number, not concentrations, of tentatively identified compounds (TICs).

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Semivolatile Organic Analysis for Sediment Samples Avenue O and 118th Street Site			
Semivolatile Compound	Sample Number Concentrations in µg/kg		
	ST01	ST02	ST03 Background
Phenol	3300 U	1300 U	1100 U
bis(2-Chloroethyl)Ether	3300 U	1300 U	1100 U
2-Chlorophenol	3300 U	1300 U	1100 U
1,3-Dichlorobenzene	3300 U	1300 U	1100 U
1,4-Dichlorobenzene	3300 U	1300 U	1100 U
1,2-Dichlorobenzene	3300 U	1300 U	1100 U
2-Methylphenol	3300 U	1300 U	1100 U
2,2'-oxybis(1-Chloropropane)	3300 U	1300 U	1100 U
4-Methylphenol	3300 U	1300 U	1100 U
n-Nitroso-Di-n-Propylamine	3300 U	1300 U	1100 U
Hexachloroethane	3300 U	1300 U	1100 U
Nitrobenzene	3300 U	1300 U	1100 U
Isophorone	3300 U	1300 U	1100 U
2-Nitrophenol	3300 U	1300 U	1100 U
2,4-Dimethylphenol	3300 U	1300 U	1100 U
bis(2-Chloroethoxy)Methane	3300 U	1300 U	1100 U
2,4-Dichlorophenol	3300 U	1300 U	1100 U
1,2,4-Trichlorobenzene	3300 U	1300 U	1100 U
Naphthalene	3300 U	130 J	1100 U
4-Chloroaniline	3300 UJ	1300 UJ	1100 UJ
Hexachlorobutadiene	3300 U	1300 U	1100 U
4-Chloro-3-Methylphenol	3300 U	1300 U	1100 U
2-Methylnaphthalene	3300 U	1300 U	1100 U
Hexachlorocyclopentadiene	3300 UJ	1300 UJ	1100 UJ
2,4,6-Trichlorophenol	3300 U	1300 U	1100 U
2,4,5-Trichlorophenol	8000 U	3200 U	2600 U
2-Chloronaphthalene	3300 U	1300 U	1100 U
2-Nitroaniline	8000 UJ	3200 UJ	2600 UJ
Dimethyl Phthalate	3300 U	1300 U	1100 U
Acenaphthylene	3300 U	180 J	1100 U
2,6-Dinitrotoluene	3300 U	1300 U	1100 U
3-Nitroaniline	8000 UJ	3200 UJ	2600 UJ
Acenaphthene	3300 U	1300 U	1100 U
2,4-Dinitrophenol	8000 UJ	3200 UJ	2600 UJ
4-Nitrophenol	8000 U	3200 U	2600 U
Dibenzofuran	3300 U	1300 U	1100 U
2,4-Dinitrotoluene	3300 U	1300 U	1100 U
Diethylphthalate	3300 U	1300 U	1100 U
4-Chlorophenyl-phenylether	3300 U	1300 U	1100 U
Fluorene	3300 U	120 J	1100 U
4-Nitroaniline	8000 UJ	3200 UJ	2600 UJ
4,6-Dinitro-2-Methylphenol	8000 U	3200 U	2600 U
n-Nitrosodiphenylamine	3300 UJ	1300 UJ	1100 UJ

Semivolatile Organic Analysis for Sediment Samples (Continued) Avenue O and 118th Street			
Semivolatile Compound	Sample Number Concentrations in µg/kg		
	ST01	ST02	ST03 Background
4-Bromophenyl-phenylether	3300 U	1300 U	1100 U
Hexachlorobenzene	3300 U	1300 U	1100 U
Pentachlorophenol	8000 RUJ	3200 UJ	2600 UJ
Phenanthrene	3300 U	1500	110 J
Anthracene	3300 U	310 J	1100 U
Carbazole	3300 UJ	1300 UJ	1100 UJ
di-n-Butylphthalate	3300 U	1300 U	1100 U
Fluoranthene	430 J	3800	210 J
Pyrene	390 J	2800	170 J
Butylbenzylphthalate	3300 U	1300 U	1100 U
3,3'-Dichlorobenzidine	3300 UJ	1300 UJ	1100 UJ
Benzo(a)Anthracene	260 J	1700	120 J
Chrysene	260 J	1500	160 J
bis(2-Ethylhexyl)Phthalate	1400 J	730 J	1000 J
di-n-Octyl Phthalate	3300 U	1300 U	1100 U
Benzo(b)Fluoranthene	3300 U	2300	210 J
Benzo(k)Fluoranthene	3300 U	1000 J	1100 U
Benzo(a)Pyrene	3300 U	1700	140 J
Indeno(1,2,3-cd)Pyrene	3300 U	1100 J	1100 U
Dibenzo(a,h)Anthracene	3300 U	200 J	1100 U
Benzo(g,h,i)Perylene	3300 U	550 J	1100 U
Total Number of TICs*	5	11	15

* Number, not concentrations, of tentatively identified compounds (TICs).

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Semivolatile Organic Analysis for Sediment Samples Tentatively Identified Compounds Avenue O and 118th Street Site Concentrations in µg/kg		
Compound Name	Retention Time	Estimated Concentration
Sample ST01		
Unknown	2.22	2600 UJB
Aliphatic Hydrocarbon	14.30	3100 J
Aliphatic Hydrocarbon	23.05	1000 J
Aliphatic Hydrocarbon	24.43	3200 J
Aliphatic Hydrocarbon	25.73	710 J
Sample ST02		
Unknown	2.17	1700 UJB
Unknown	2.68	430 J
Aliphatic Hydrocarbon	14.25	5500 J
Unknown	16.95	440 J
Aliphatic Hydrocarbon	23.02	1500 J
Unknown	23.52	690 J
Unknown	23.72	1600 J
Polyaromatic Hydrocarbon	23.82	1200 J
Aliphatic Hydrocarbon	24.40	4600 J
Aliphatic Hydrocarbon	25.68	1200 J
Unknown	25.80	590 J
Sample ST03-Backgound		
Unknown	2.22	1100 UJB
Unknown	16.98	430 J
Aliphatic Hydrocarbon	23.05	590 J
Aliphatic Compound	23.75	370 J
Aliphatic Hydrocarbon	24.43	2300 J
Unknown	24.80	350 J
Aliphatic Compound	25.08	270 J
Aliphatic Compound	25.35	310 J
Unknown	25.42	290 J
Aliphatic Hydrocarbon	25.73	3000 J
Unknown	26.02	860 J
Aliphatic Compound	26.12	340 J
Unknown	26.45	320 J
Unknown	26.60	780 J
Unknown	26.92	850 J

sed-tis.wk4

Pesticide/PCB Analysis for Sediment Samples Avenue O and 118th Street Site			
Pesticide/PCB	Sample Number Concentrations in µg/kg		
	ST01	ST02	ST03 Background
Alpha-BHC	68 UJ	5.9 U	5.5 UJ
Beta-BHC	68 UJ	5.9 U	5.5 UJ
Delta-BHC	68 UJ	5.9 U	5.5 UJ
Gamma-BHC (Lindane	68 UJ	5.9 U	5.5 UJ
Heptachlor	68 UJ	5.9 U	5.5 UJ
Aldrin	68 UJ	5.9 U	5.5 UJ
Heptachlor Epoxide	68 UJ	5.9 U	5.5 UJ
Endosulfan I	68 UJ	5.9 U	5.5 UJ
Dieldrin	130 UJ	11 U	11 UJ
4,4'-DDE	78 J	21 P	11 J
Endrin	130 UJ	11 U	11 UJ
Endosulfan II	130 UJ	11 U	11 UJ
4,4'-DDD	370 J	30 P	11 UJ
Endosulfan Sulfate	130 UJ	11 U	11 UJ
4,4'-DDT	740 J	11 U	11 UJ
Methoxychlor	680 UJ	59 U	55 UJ
Endrin Ketone	130 UJ	11 U	11 UJ
Endrin Aldehyde	130 UJ	11 U	11 UJ
Alpha-Chlordane	68 UJ	5.9 U	5.5 UJ
Gamma-Chlordane	68 UJ	5.9 U	5.5 UJ
Toxaphene	6800 UJ	590 UJ	550 UJ
Aroclor-1016	1300 UJ	110 UJ	110 UJ
Aroclor-1221	2700 UJ	230 UJ	220 UJ
Aroclor-1232	1300 UJ	110 UJ	110 UJ
Aroclor-1242	1300 UJ	110 UJ	110 UJ
Aroclor-1248	1300 UJ	110 UJ	110 UJ
Aroclor-1254	1300 UJ	110 UJ	110 UJ
Aroclor-1260	1300 UJ	110 UJ	110 UJ

sed-pest.wk4

Inorganic Analysis for Sediment Samples Avenue O and 118th Street Site			
Metals and Cyanide	Sample Number Concentrations in mg/kg		
	ST01	ST02	ST03 Background
Aluminum	8940 J*	6400 J*	3880 J*
Antimony	72.6 U	45.3 B	17.3 U
Arsenic	9.9 B	8.2 B	7.6
Barium	345 B	127 B	71.8 B
Beryllium	0.82 U	0.85 B	0.54 B
Cadmium	7.7 U	4.7 B	3.2 B
Calcium	29900 JE	37400 JE	9520 JE
Chromium	54.7	430	25.8
Cobalt	8.8 U	7.5 B	3.1 B
Copper	120	79.7	50.2
Iron	9380 *	21900 *	12000 *
Lead	682 *	262 *	198 *
Magnesium	5120 B	14600	1470 B
Manganese	306 J*	467 J*	213 J*
Mercury	0.90 B	0.48 B	0.35
Nickel	33.2 U	35.6 B	18.3 B
Potassium	8680 U	3270 U	2070 U
Selenium	4.9 UJNW	1.9 JBNW	1.2 UJN
Silver	9.3 U	3.5 U	2.2 U
Sodium	1660 B	509 B	410 B
Thallium	1.9 U	0.72 U	0.46 U
Vanadium	40.5 B	34.4 B	20.9 B
Zinc	633 JE	664 JE	309 JE
Cyanide	4.4 B	1.9 B	0.47 U

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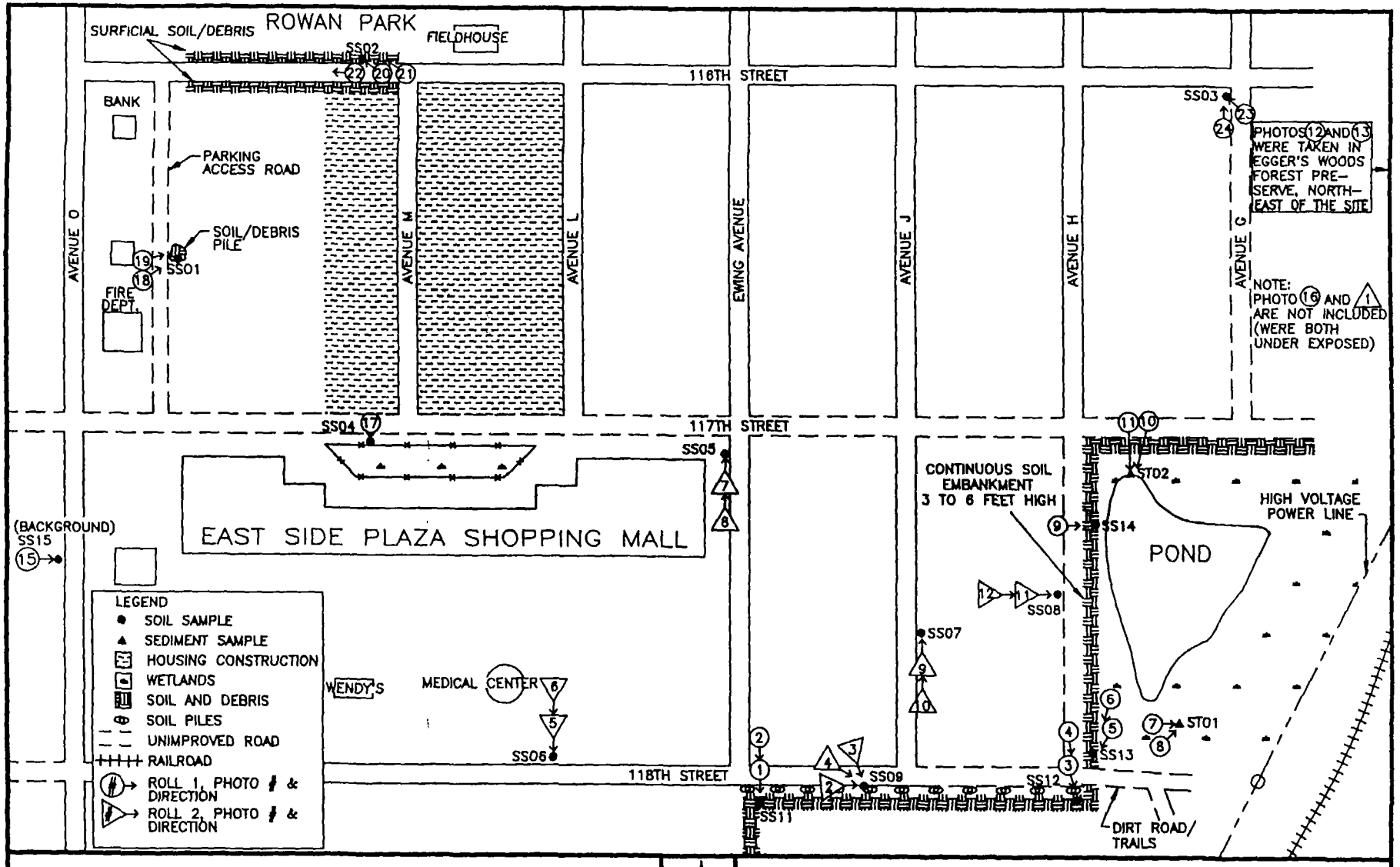
Appendix D

Avenue O and 118th Street

Site Photographs



SOURCE: MODIFIED FROM USGS, 1991

SCALE: NOT TO SCALE

FIGURE D-1
PHOTO LOCATION MAP

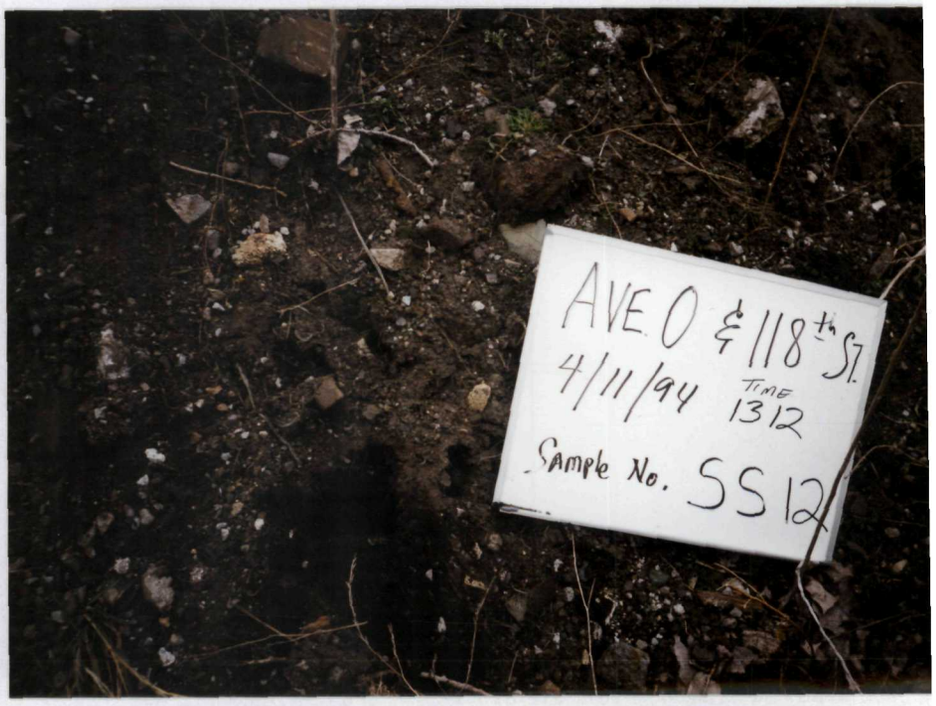
AVENUE O & 118TH STREET
CHICAGO, ILLINOIS

CH000383 03/23/98

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 1
Date: 4-11-94 Time: 1245
Description: Photo taken facing south showing a close-up of the SS11 sample location. SS11 was collected from west end of the continuous dirt embankment that runs along the southeastern site perimeter.

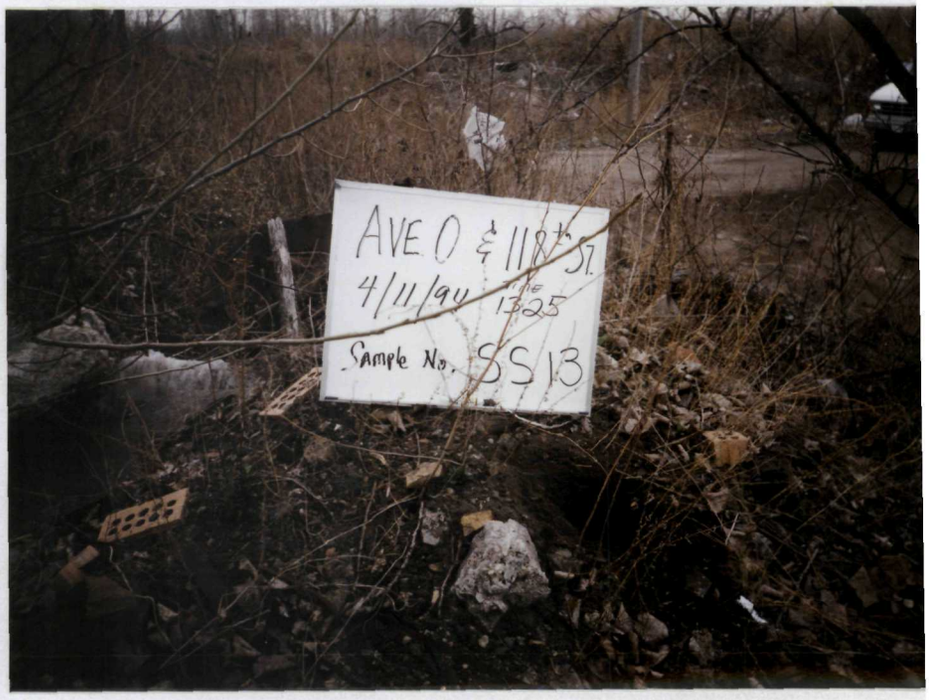
Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 2
Date: 4-11-94 Time: 1246
Description: Photo taken facing south from a residential sidewalk area at the northeastern quadrant of the intersection of Ewing Avenue and 118th Street. The photo shows the approximately 5-foot-tall dirt embankment, along the southeastern corner of the intersection of Ewing and 118th Street, from which SS11 was collected.

Site: Avenue O and 118th Street
Proj. #: 71280
Roll: 1 Photo #: 3
Date: 4-11-94 Time: 1312
Description: Photo taken facing south, showing a close-up of the SS12 sample location. SS12 was collected from the east end of the dirt embankment that runs along 118th Street, near the intersection of Avenue H and 118th Street.

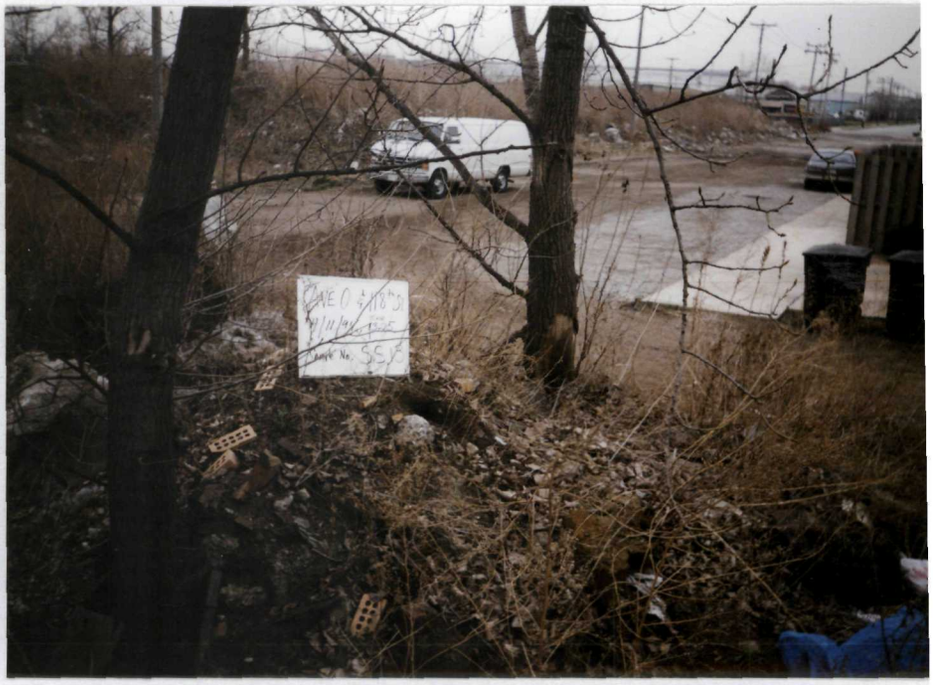


Site: Avenue O and 118th Street
Proj. #: 71280
Roll: 1 Photo #: 4
Date: 4-11-94 Time: 1314
Description: Photo taken facing south, showing the dirt embankment where sample SS12 was collected. There is a telephone pole in the foreground of the photo and a tree and high-voltage electrical power-line support structures in the background.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 5
Date: 4-11-94 Time: 1325
Description: Photo taken facing southwest, showing the SS13 sample location. There are rocks, bricks, and other debris visible in the foreground of the photo.



Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 6
Date: 4-11-94 Time: 1326
Description: Photo taken facing southwest showing the area where SS13 was collected. There are two trees in the photo, one just east of the SS13 location and the other just west. The eastern end of 118th Street is shown in the background with a white van parked on the south side of 118th Street.



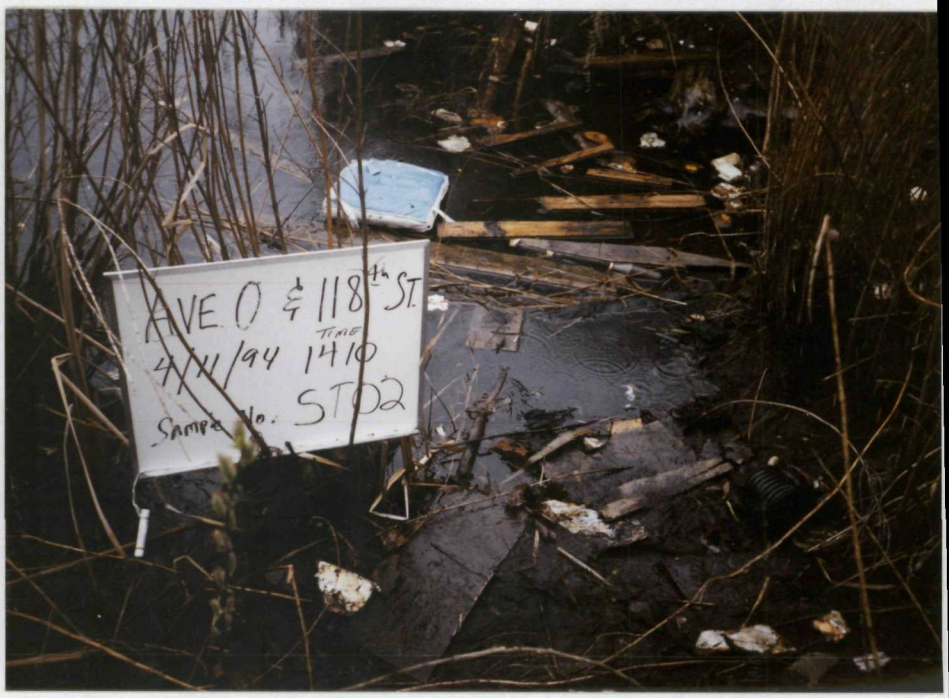
Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 7
Date: 4-11-94 Time: 1346
Description: Photo taken facing east, showing the marshy area where ST01 was collected. There are a few fallen trees, tall dried grass, and an air monitoring instrument visible in the photo.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 8
Date: 4-11-94 Time: 1348
Description: Photo taken facing northeast, standing south of the wetlands that exists east of the site, showing the swampy area where sample ST01 was collected.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 9
Date: 4-11-94 Time: 1400
Description: Photo taken facing east, showing the SS14 location. SS14 was collected from the northern portion of the dirt embankment that runs along Avenue H. This part of the embankment is slightly vegetated and there is some solid waste articles in the foreground of the photo.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 10
Date: 4-11-94 Time: 1420
Description: Photo taken facing south, showing the wetlands area (includes a pond) where ST02 was collected. ST02 was collected from the north side of the pond located in the wetlands just east of the portion of the site's boundary that runs along Avenue H.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 11
Date: 4-11-94 Time: 1421
Description: Photo taken facing south, showing a close-up of the ST02 location. There are solid waste debris, such as wooden boards and a vinyl-covered cushion, visible in the pond in the photo.



Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 12
Date: 4-11-94 Time: 1435
Description: Photo taken facing west, showing the wooded area within the Eggers Woods Forest Preserve, where background soil sample SS16 was collected.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 13
Date: 4-11-94 Time: 1445
Description: Photo taken facing east, showing the swampy wetlands area within the Eggers Woods Forest Preserve, where the background sediment sample ST03 was collected.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 14
Date: N/A Time: N/A
Description: Photo Not Included because it was overexposed.

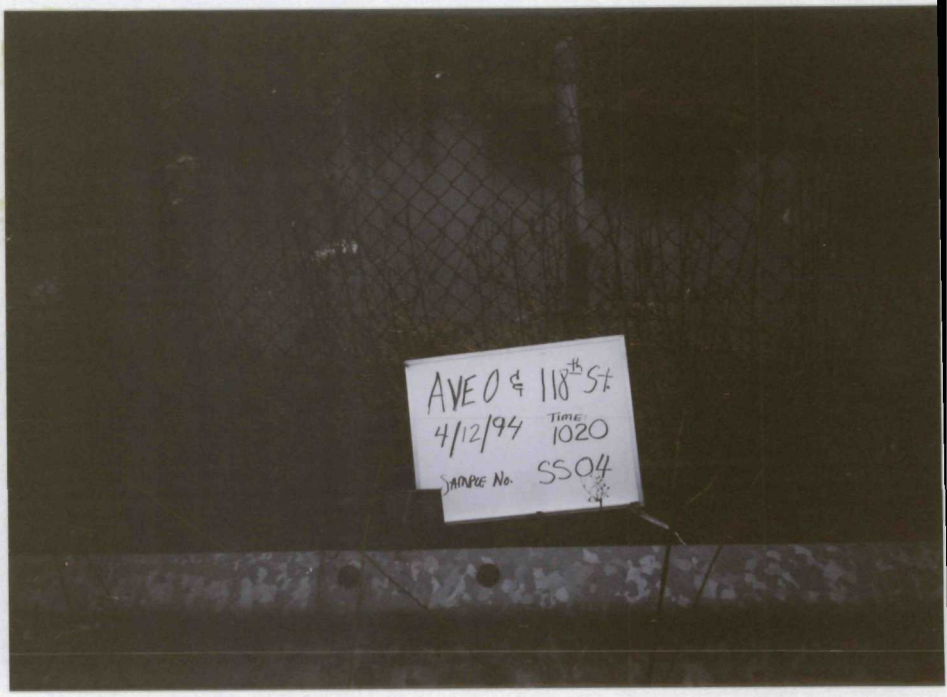
(Photo Not Included)

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 15
Date: 4-12-94 Time: 0955
Description: Photo taken facing east, showing the grassy area on the west side of Avenue O where background soil sample SS15 was collected. There is a tree on the left side of the photo, a fire hydrant in the center foreground, and Avenue O and the west side of the small shopping mall on the east side of Avenue O is shown in the background.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 16
Date: N/A Time: N/A
Description: Photo not included because it was underexposed.

(Photo Not Included)

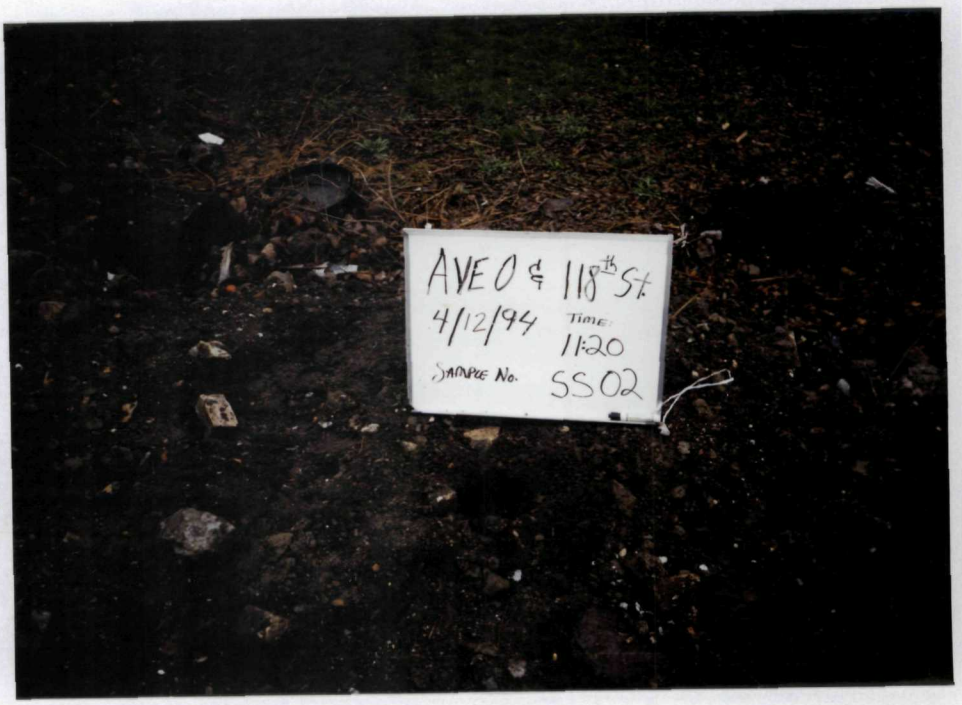
Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 17
Date: 4-12-94 Time:
Description: Photo taken facing south, showing the location where sample SS04 was collected. Photo is somewhat underexposed but some dry grass and the fence located south of the sampling point and the pond south of the fence are noticeable. The photo placard with site name, photo date/time, and sample number is clearly visible.



Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 18
Date: 4-12-94 Time: 1055
Description: Photo taken facing northeast, showing a close-up of the dirt and rubble pile that sample SS01 was collected from.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 19
Date: 4-12-94 Time: 1056
Description: Photo taken facing east/northeast, showing the dirt and rubble pile, laced with construction debris, where sample SS01 was collected. There are newly constructed houses in the background.

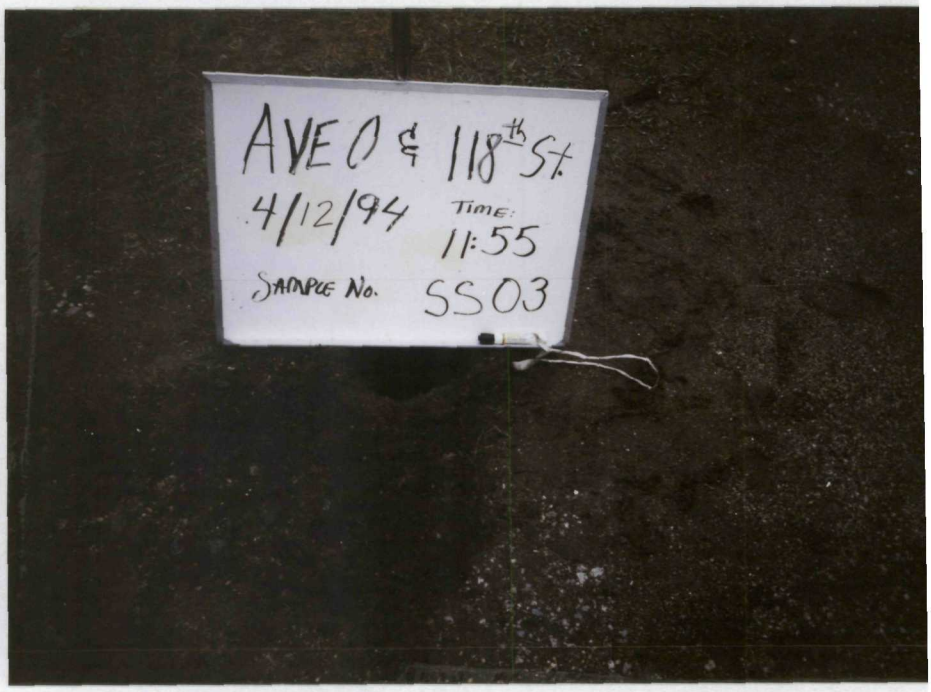
Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 20
Date: 4-12-94 Time: 1120
Description: Photo taken facing northwest, showing a close-up of the SS02 sampling point. The sample was collected from heaped dirt laced with rocks and litter along the north side of 116th Street.



Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 21
Date: 4-12-94 Time: 1121
Description: Photo taken facing northwest, showing the SS02 sample location. Rowan Park (with park benches and trees) is visible in the background and the right side of the rear end of a white van is on the left.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 22
Date: 4-12-94 Time: 1122
Description: Photo taken facing west, from a standing point on the north side of 116th Street, just west of the SS02 sample location, showing a newly paved section of 116th Street. There is a continuous row of soil with rocks and debris along the north side of the road's curb/shoulder. Newly constructed homes, vehicles parked in the street, and the bank at the SE corner of Avenue O and 116th Street are visible in the background.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 23
Date: 4-12-94 Time: 1157
Description: Photo taken facing northwest showing a close-up of the SS03 sampling point.



Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 1 Photo #: 24
Date: 4-12-94 Time: 1158
Description: Photo taken facing north, showing the sidewalk along the west side of Avenue G. The photo also shows a white photo placard in an upright position at the dirt area between the sidewalk and the Avenue G where soil sample SS03 was collected. Two white vans, parked on Ave. G, are shown.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 1
Date: N/A Time: N/A
Description: Photo not included because it was overexposed.

(Photo Not Included)

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 2
Date: 4-12-94 Time: 1330
Description: Photo taken facing east/southeast showing the heaped dirt that soil sample SS09 was collected from on the south side of 118th Street. The front ends of two white vans appear in the photo and a telephone pole is in the foreground.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 3
Date: 4-12-94 Time: 1332
Description: Photo taken facing southeast showing a close-up of the SS09 sampling point. SS09 was collected from a heap of dirt located between the continuous dirt embankment that runs along the south side of 118th Street and the road itself.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 4
Date: 4-12-94 Time: 1333
Description: Photo taken facing east/southeast showing the SS09 sampling location. This photo is similar to Photo #2 of Roll #2.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 5
Date: 4-12-94 Time: 1400
Description: Photo taken facing south, showing a close-up of the SS06 sample point. There is a fire hydrant in the background, behind the photo placard.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 6
Date: 4-12-94 Time: 1401
Description: Photo taken facing south, showing the SS06 sampling point, with 118th Street just beyond the sample point and a brick building and parking lot with vehicles in the background.

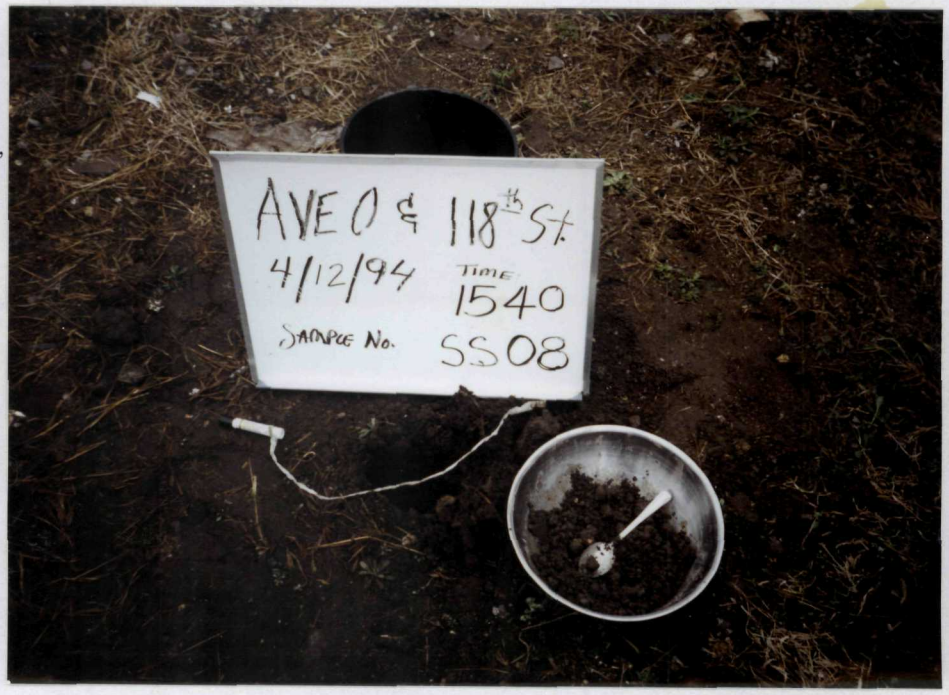
Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 7
Date: 4-12-94 Time: 1455
Description: Photo taken facing north, showing a close-up of the SS05 sample location. A photo placard and sample bowl and spoon are in the foreground of the photo.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 8
Date: 4-12-94 Time: 1456
Description: Photo taken facing north showing the grassy area between the sidewalk and Ewing Avenue where SS05 was collected.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 9
Date: 4-12-94 Time: 1510
Description: Photo taken facing north, showing a close-up of the SS07 sample location. SS07 was collected from a dirt area between the sidewalk and Avenue J (on the east side of Ave. J).

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 10
Date: 4-12-94 Time: 1511
Description: Photo taken facing north, showing the SS07 sample location. There are residential units, sidewalks, and vehicles parked along the east side of Avenue J in the photo.

Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 11
Date: 4-12-94 Time: 1540
Description: Photo taken facing east, showing a close-up of the SS08 sample location. SS08 was collected from the backyard of an onsite residential unit.



Site: Avenue O and 118th Street
Proj. #: 71280.102
Roll: 2 Photo #: 12
Date: 4-12-94 Time: 1541
Description: Photo taken facing east, showing the SS08 sample location in the backyard of an onsite residential unit. In the background, a white van is parked on Avenue H, east of the residence. A garage is shown, in the photo, on the right (south).